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Regular Edition

Vol. LXXXIX. JANUARY 6, 1906. No. 1567.

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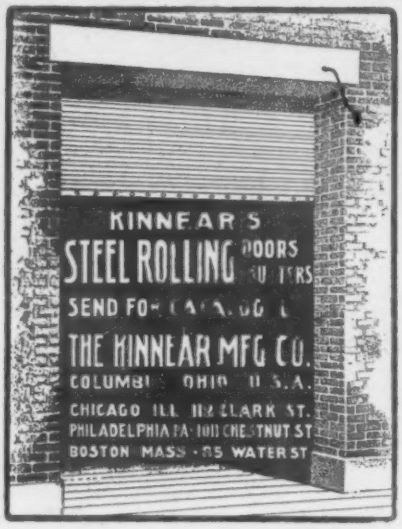

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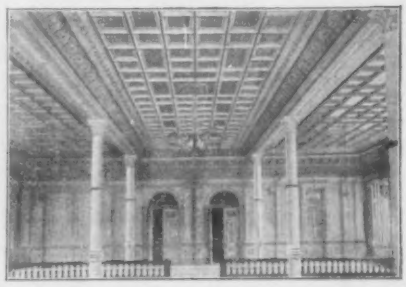

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SOCIETIES

AMERICAN INSTITUTE OF ARCHITECTS.

Programme of the Thirty-ninth Annual Convention, to be held in Washington, D. C., at the New Willard Hotel, January 8, 9, 10 and 11, 1906.

Delegates will be distinguished by a red ribbon, and will occupy seats from the front row as far back as is necessary for their accommodation.

Members of the Institute who are not delegates are entitled to take part in all discussions, to offer resolutions and motions, and to vote on a proposition that it is "the sense of the meeting."

Order of Business.

Monday, January 8.

Meeting of the Board of Directors in the Octagon at 10 a. m.

Tuesday, January 9—Morning Session.

The members of the Institute will meet in the assembly hall on the tenth floor of the New Willard Hotel, Washington, D. C., at 9.30 o'clock.

Report of the Board of Directors.

Report of Treasurer and Auditing Committee.

Reports of Chapters, a synopsis by the Secretary.

(*a*) Judiciary, Alfred Stone, Chairman.
(*b*) House and Library, Robert Stead, Chairman.
(*c*) Education and Publication, H. L. Warren, Chairman.
(*d*) Foreign Correspondence, Glenn Brown, Chairman.
(*e*) Contracts and Lien Laws, Alfred Stone, Chairman.

Reports of Special Committees:

(*a*) Government Architecture, Geo. B. Post, Chairman.
(*b*) Washington City, Wm. S. Eames, Chairman.
(*c*) World's Congress, Wm. S. Eames, Chairman.
(*d*) Securing Funds for the purchase of The Octagon, John M. Carrère, Chairman.
(*e*) Nominations for Honorary and Corresponding Members, Frank Miles Day, Chairman.
(*f*) Delegate to National Conference Electrical Code, and to meeting of National Fire Protection Association, Alfred Stone, delegate.

Afternoon Session—2 o'clock.

Report of Committees not reached at morning session.

Report of Committee on Competitions, Glenn Brown, Chairman.

Papers:

"Competitions," by Robert D. Andrews; the following members of the Institute have been requested to take part in a discussion on competitions: John M. Carrère, J. L. Mauran, Cass Gilbert, Wm. B. Mundie, Ralph Adams Cram, A. W. Lord, T. C. Young, N. S. Patton and J. M. Donaldson.

Evening Session—Banquet.

Banquet at 8 o'clock in the hall of the New Willard, to which all members and their accompanying ladies have the privilege of attendance upon payment of $5 per plate.

Wednesday, January 10—Morning Session.

Report of Committee on Municipal Improvements, Frank Miles Day, Chairman.

Papers (illustrated by lantern slides):

"The Artistic Development of Paris," by Mr. Eugène Henard.

"Improvement of the Schuylkill River Banks," by C. C. Zantzinger.

"Municipal Improvements in the Borough of Brooklyn, New York City," by Electus D. Litchfield.

Afternoon Session—2 o'clock.

Report of Special Committees not finished at last session.

Action on proposed amendments to by-laws.

Unfinished business of the previous day.

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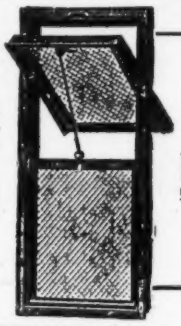

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There will be a reception at The Octagon from 4 to 6 o'clock p. m.

Evening Session—8 o'clock.

Paper:

"The Development of Manila" (illustrated), by D. H. Burnham, at 8 o'clock p. m., in the hall of the National Geographic Society, corner Sixteenth and M Sts., N.W., to which the public will be invited.

CINCINNATI CHAPTER, A. I. A.

At the meeting of the Cincinnati Chapter of the American Institute of Architects at the Business Men's Club, December 19, the sewerage question of the northern suburbs was discussed, the speakers being Thomas B. Punshon, former City Engineer, and C. H. Meeds, secretary of the Engineers' Club.

Mr. Punshon favored the building of a sewer which would take in the discharge of all the northeastern suburbs, including Walnut Hills, part of Avondale, Hyde Park, Norwood and Oakley, and thence turn south toward the Ohio River, taking in the valley just north of Linwood.

Mr. Meeds talked on the Millcreek Valley scheme, which is now up to the County Commissioners for consummation, as the Legislature has granted that body the right to make a levy for the purpose. The valley has been surveyed up to Ivorydale, and the cost of constructing the sewer is estimated at $910,475. It will be capable of carrying off 174,000,000 cubic feet of waste every 24 hours. Engineers, said Mr. Meeds, favor its construction on the east side of the creek, with a grade of one foot to every 1,000 feet, with an opening of 7.9 feet at the mouth and 6 feet at Ivorydale. The entire improvement would be laid below the level of the creek. Mr. Meeds stated that the sewerage of a large part of Cincinnati finds its way to Millcreek, including all the district north of McMillan street and as far east as Walnut Hills.

The architects intend to agitate the matter. Messrs. Anderson, Rapp and Hayward were appointed a committee to secure a map of the proposed sewerage system and find means to introduce it before Council.

The Cincinnati Chapter passed resolutions inviting the American Institute of Architects to hold its next annual convention in this city next fall. New members elected were H. Spielman, of Samuel Hannaford & Sons, and David Davis, of Brown & Davis.

WASHINGTON ARCHITECTURAL CLUB.

The annual Yuletide jollification of the Washington Architectural Club was held December 21 in its clubrooms, No. 1420 F street. The entertainment consisted of a drama, entitled "The Mystery of the Boarding House." During the performance refreshments were served. The committee on arrangements were Messrs. Stevens, McAllister, Lix, Wolfsteiner and Noll.

A surprise feature of the evening was the presentation of a silver loving-cup to Kort Berle, recently chief structural engineer of the Supervising Architect's Office.

RHODE ISLAND CHAPTER, A. I. A.

The Rhode Island Chapter of the American Institute of Architects held its regular monthly meeting December 20 at the Art Club, the following members being present: G. W. Cady, P. O. Clarke, E. F. Ely, H. K. Hilton, F. R. Hindle, E. B. Homer, A. H. Humes, N. M. Isham, E. I. Nickerson, W. T. Robertson, H. A. Slocum, Alfred Stone, E. R. Willson. Harry Barker, of the Public Park Association, and D. C. E. Lamb, of Washington, were guests.

Some time ago the Chapter set itself the task of preparing a comprehensive scheme for the improvement of the whole central part of the city, and Wednesday preliminary plans were presented to the Chapter by Mr. Stone, Mr. Homer, Mr. Willson and Mr. Hilton. The evening was given to an explanation and discussion of these schemes, and, while there was some diversity of opinion on minor details, the members present were unanimously agreed on certain main points.

They put themselves on record as in favor of carrying Waterman street through from North Main street to Canal street, of such a width that the northern boundary of this extension should line with the northern boundary of Exchange place, thus both giving direct access from Waterman street

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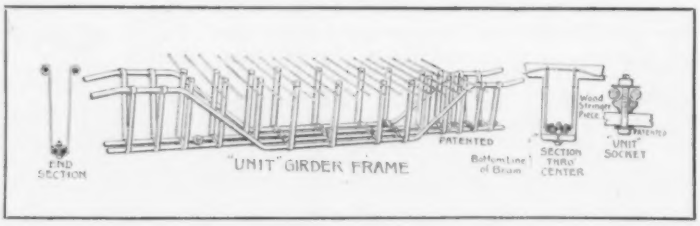

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to Exchange place, and also opening up a vista, which would bring the First Baptist Church and yard into view from Washington street.

They also voted that when the new bridge is built over the Woonasquatucket river, it ought to be put on the axial line of the State House, in order that there might be one long, straight line of approach, leading directly to the front of the State House.

The third point, upon which the members agreed, was that Gaspee street ought to be so changed as to run in a straight line from the point of its present juncture with Smith street to the Francis street bridge. This would make the State House grounds of much better shape, and would also remove the small corner of the freight yard, which now interferes so seriously with the view of the State House from the centre of the city. Further sketches will come up for discussion at the next meeting.

ST. LOUIS ARCHITECTURAL CLUB.

Professor Halsey C. Ives addressed the St. Louis Architectural Club in its rooms in the Dolph building December 21 on the subject of "The Proposed Architectural Extension and Development of the Museum of Fine Arts in St. Louis." Professor Ives illustrated his talk with drawings of the proposed buildings.

"When the World's Fair was first suggested," said Professor Ives, "it occurred to me that the greatest good that would come to St. Louis from such an exposition would be the material from which to build a museum.

"With this thought in mind, I formulated plans whereby the Exposition Company would leave a building as a monument to the greatest of expositions, which would be a suitable home for such a museum. The city ordinance permitting the erection of a building for the purpose of exhibiting art during the Exposition makes it possible for the Palace of Fine Arts to become the home of the Museum of Fine Arts.

"We not only want this, but we also want to erect a building to be used as an architectural museum. The proposed building will cost $1,000,000. I have had plans and drawings prepared by M. Binet, a French architect. The proposed building will be

composed of twelve alcoves, a reception-room, a reading-room and an auditorium. The alcoves will represent the Greek, Roman, Gothic, Moorish, American, Byzantine, Celtic, Chinese and Renaissance styles of architecture.

"In the plans for the Architectural Museum I have consulted many who are connected with museums, and they all say that it would be one of the finest and best things that could be done for St. Louis or any other city.

"I believe it possible for St. Louis to build and create such a museum. The conditions and the attitude toward art in St. Louis have changed. People realize that art has an important place in the economics of life."

WASHINGTON STATE CHAPTER A. I. A.

Standing committees for the year were appointed by President A. W. Spalding, of the Washington State Chapter American Institute of Architects, at the last regular meeting. In addition to the appointment of committees, W. D. Van Siclen was elected second vice-president, and several new members were received. The new committees follow:

Committee on Papers: W. D. Kimball, chairman; A. Warren Gould and R. C. Kerr.

Committee on Classification of Contracts: James Stephen, chairman; Andrew McBean.

Committee on Codes and Competition: G. W. Lawton, chairman; D. R. Huntington, W. M. Somervell.

Committee on Rooms and Library: Emil DeNeuf, chairman; James C. Teague and J. F. Everett.

Committee on Legislation: Jas. Blackwell, chairman; C. D. Wilson and Theo. Buchinger.

Committee on Public and Civic Improvements: C. W. Saunders, chairman; W. D. Van Siclen and N. B. Allen.

Committee on Code of Ethics: C. H. Bebb, chairman; A. J. Russell and Mr. Meyers.

ARCHITECTURAL LEAGUE OF AMERICA.

The programme for the annual convention to be held at New York Jan. 31 and Feb. 1-2 is as follows:

Wednesday, Jan. 31.

10.00 a. m.—Business session at 215 W. 57th St. The luncheon will be given to the delegates by the National Sculpture Society. At this luncheon extemporaneous talks will be given and the luncheon will be followed by an excursion to parts of the city where sculpture may be seen in its proper setting.

Thursday, Feb. 1.

10.00 a. m.—Business session at 215 W. 57th St.—The luncheon will be given to the delegates by the National Society of Mural Painters. An evening address by Prof. A. D. F. Hamlin on the relation of sculpture and painting to architecture from an historical standpoint. There may be another paper, as yet undecided, on this evening.

Friday, Feb. 2.

10.00 a. m.—Business session at 215 W. 57th St. The early afternoon will be devoted to unfinished business. The rest of the time will be left to the discretion of the delegates. At 7.00 p. m. the delegates will attend the annual dinner and opening of the exhibition of the Architectural League of New York.

PERSONAL MENTION.

UTICA, N. Y.—In the case of John A. Hobbs *vs.* Matthew Welch, in the County Court, the jury returned a verdict of $300.26, principal and interest, for plaintiff. A motion to set the verdict aside, made by Mr. Coupe, was denied. Stay of thirty days was granted, or sixty days, if appeal is taken. The case was an action to recover $281.02 for drawing plans and specifications, in August, 1904, for the construction of a 6-family flat near Oneida Square, estimated to cost $11,241. The defense was that the cost of the building was stipulated not to exceed $12,000, but that the lowest bid on the plans furnished by plaintiff did exceed that sum; that the plans could not be and were not used, and that other plans had to be substituted. The plaintiff claimed that the original plans brought the cost some hundreds of dollars less than the $12,000, but that defendant afterwards asked that changes be made, more expensive lumber used, brick walls made twelve instead of eight inches thick, and other alterations which combined to make the cost of construction more than $12,000.

The plaintiff testified to the work he did and identified plans and specifications drawn by him, blue prints of which were delivered to defendant, and which the defendant said were satisfactory. Bids for construction were asked for and received. Defendant said he would let plaintiff know about it in a few days; that he wanted to show the plans and specifications to a friend. Witness footed up the lowest bids for different parts of the work and showed it to defendant. The total was $11,241. Witness enumerated changes made and the probable cost of each. Defendant had the plans a week or ten days.

On cross-examination witness denied that defendant restricted him to $12,000. He had John R. Williams, a carpenter, make an estimate which was about $11,050. That was on the rough sketch first made. Witness was unable to tell what figures he gave to Mr. Welch as to the total cost after the changes, but remembered there was talk about cutting down to bring it within $12,000. Defendant took the plans to think about it. He returned them in a week or ten days. That was the last time witness had any talk with defendant about the plans. Defendant did not use them to knowledge of witness.

The defendant was the chief witness for himself. He testified that the plaintiff agreed that $12,000 would pay for the flat and his fees for drawing the plans and specifications; that more than $12,000 was necessary according to the specifications. Therefore, he had refused to accept the plans. Speaking of the value of plaintiff's work defendant testified that plaintiff asked $200. Defendant told plaintiff he thought $75 was enough, but plaintiff didn't agree with him.

BRATTLEBORO, VT.—Edward A. Plummer, architect, 47 years old, committed suicide by shooting through the head with a revolver in his apartments over the Vermont National Bank, Dec. 22. He left a note saying his act was due to ill health.

BERKELEY, CAL.—Mr. A. Dodge Coplin, architect, has lost his suit against Mrs. Fate F. Keyes, of Berkeley, whom he had sued for $625, alleged to be due for the drawing of plans for a $30,000 apartment house which was never built. Judge Waste decided against Coplin, holding that the evidence went to show that the acceptance of the plans was contingent upon his floating a loan for the erection of the building.

BROOKLYN, N. Y.—Mr. Robert T. Rasmussen, an architect, with an office at 30 Graham Ave., Brooklyn, is sending out a letter of protest against the appointment

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of Samuel Greenblatt of Deputy Superintendent of the Brooklyn Buildings Department to every architect in the borough. He argues that Greenblatt, whom Borough President-elect Bird S. Coler has appointed to that place is too young and entirely without experience. He is 24 years old, and his only business training has been with his father, who is in the tailors' trimming trade.

In his letter to the architects Mr. Rasmussen says among other things:

"I would respectfully call your attention to the fact that this appointee has no more knowledge of the building trade than one of the street cars running through the Brooklyn streets."

Troy, N. Y.—Charles Van Buskirk Baker died on Christmas Day, after a long illness. Mr. Baker was a man of brilliant attainments and possessed those sterling qualities of character which endeared him to all who know him. He was born in Racine, Wis., and came to Troy with his parents. In 1884 he graduated from the Troy High School. Entering the Massachusetts Institute of Technology he took a special course in architecture. Upon leaving college he located in New York, where he became head of the specifications department of McKim, Mead & White.

Montreal, P. Q.—Mr. W. S. Painter has been appointed architect of the Canadian Pacific Railroad, with headquarters in Montreal. He will have charge of the designing of the company's buildings erected along the system. This is a new office in the company, and the selection of Mr. Painter as head of the department is regarded as an evidence that considerable important work in buildings is contemplated. Mr. Painter has planned and supervised the construction of several large buildings, among others the Auditorium in Quebec, the Majestic Theater in Toronto, the Russell Theater in Ottawa, the Century Club in Detroit, and the Colonial Theater in Cleveland.

Atlantic City, N. J.—On Dec. 22 the jury in the United States Circuit Court gave verdict for $2,260 in favor of the plaintiffs in the case of James S. Rogers and Walter MacFarland, architects, against Philip J. and Joseph H. Marvel and Joseph H. Borton, of Atlantic City. Plaintiffs claimed $5,602.37, as architects' commission, on a hotel contract here.

Providence, R. I.—On Dec. 19, a jury in the Superior Court returned a verdict for $375 for the plaintiffs in the suit of Howard K. Hilton and another against Julius H. Preston. The plaintiffs claimed that they were ordered by the defendant to make architects' plans for the construction of a house, and that after the plans were completed the defendant employed others to do the work and refused to pay for the plans ordered. Damages were laid at $750, but the actual amount claimed was the sum awarded by the jury.

Seattle, Wash.—In a circular letter announcing the regular monthly meeting of the Manufacturers' Association of Seattle, Secretary Oliver T. Erickson says:

"A number of complaints have come to your officers, alleging that the architects of Seattle are prejudiced against the local manufacturers, and use their influence to have clients send work out of the city. One of our members claims that the number of men employed making castings and structural iron could easily be doubled if the architects would use their influence to keep the work here."

Newark, N. J.—The Mayor and Common Council have been made the defendants in the trial of an action to recover $5,000, begun before Chief Justice Gummere and a jury in the Supreme Court Circuit Dec. 22, on behalf of John H. and Wilson C. Ely. The plaintiffs are architects and seek to recover the amount named as commissions for preparing plans for a city isolation hospital more than four years ago upon the order of the Board of Health.

Several architects, including the plaintiffs, testified to the work that it was claimed had been done in good faith, while the acceptance of the plans was also told about in the taking of the testimony.

BUILDING NEWS.

(The editors greatly desire to receive information from the smaller and outlying towns as well as from the larger cities.)

Aberdeen, Wash.—The Crescent Hotel, now 2-story, will be made 4-story, with elevator, at a cost of about $50,000.

Alliance, O.—An appropriation of $125,000 has been made for the construction of a new federal building here.

Altoona, Pa.—It is reported that the

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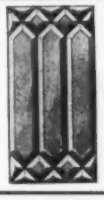

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PHILADELPHIA

First Methodist congregation of this city will erect a new $100,000 church here. J. L. Kester can inform.

AMES, IA.—The plans of Proudfoot & Bird, architects, of Des Moines, have been accepted for the new agricultural hall for the Iowa State college.

ATLANTA, GA.—P. Thornton Marye has completed plans and contract will be awarded at once for a church to be erected by St. Luke's congregation, to be 60 x 120 ft., of fireproof construction, equipped with steam heat, electric lights, etc., and cost $50,000.

AUGUSTA, GA.—It is reported that the Board of Education is considering plans for a new school building in the Fifth Ward.

BALTIMORE, MD.—It is reported that Chas. W. and John J. Hurst have purchased a site on Cathedral and Chase Sts., where they will erect a 6-story apartment house. Plans are already started.

Preliminary drawings have been completed for a new wing to the Maryland Penitentiary, for which the Legislature will be asked to appropriate $225,000.

The Johns Hopkins Club here is planning the erection of a new club house. A. Marshall Elliott is one of the members.

BARTLESVILLE, I. T.—A local company has been organized to build a hospital to cost $60,000. The incorporators are: G. W. Sutton, F. R. Sutton, G. F. Woodring, J. J. Curl and others.

BAYONNE, N. J.—It is reported that a new $50,000 Y. M. C. A. building is to be built here.

BEAUMONT, TEX.—It is reported that John B. Goodhue will erect a 4-story brick hotel at a cost of $200,000.

BEDFORD, IND.—It is reported that Dr. Gaynon intends to build a new hotel here. Cost, $75,000.

BIRMINGHAM, ALA.—The Birmingham Terminal Co. will open bids about February 1 for the erection of depot, for which P. Thornton Marye, Atlanta, Ga., was previously reported as having prepared plans; to be 80 x 785 ft., of fireproof construction, and cost about $1,000,000.

Building, Land & Securities Co., W. H. Sims, president, has purchased site on which to erect fireproof apartment house at a cost of about $150,000.

The congregation of the Five Points Methodist Church here will erect a new $70,000 church. R. S. Munger is Chairman of Committee.

It is announced that plans are nearing completion for the reconstruction of the buildings of the Great South Home Industrial Association. It is estimated that they will cost $100,000.

BOSTON, MASS.—A new building, almost twice the size of the present Harvard Law School, will be erected midway between Pierce and Hastings Halls, in the college grounds at Harvard University. The new structure will be used as a library, also for study and recitation rooms, and will be connected with the present law school structure.

BROOKLYN, N. Y.—Bids are asked by C. B. J. Snyder, Superintendent School Buildings, unttil 11 a. m., Jan. 8, for general construction of additions to and altetration in Public School No. 66 at Union Pl., between Tulip and Walnut Sts., Brooklyn, Borough of Queens.

Plans have been passed upon by Superintendent Collins, of the Bureau of Buildings, for the new Brooklyn Academy of Music. The new Academy will be erected on Lafayette Ave., between St. Felix St. and Ashland Place, and is estimated to cost, including land, etc., $1,450,000.

Separate contracts will be let for interior equipment, fixtures, etc., for the new addition which is to be built to the Graham Home for Old Ladies, office 320 Washington Ave. The addition will be built on Waverly Ave., near Myrtle Ave., and plans by Architect W. B. Tubby, 81 Fulton St., provide for a 6-story building, fireproof construction, to have the latest appliances. John Thatcher & Co., 54 Park Ave., are the builders.

The Crescent Athletic Club of Brooklyn is planning the erection of a handsome new club house.

BUFFALO, N. Y.—Carl T. Chester is interested in the new building of the Buffalo Orphan Asylum proposed for Delaware Park vicinity.

BUTTE, MONT.—The Silver City Bow Club has $45,000 now in its building fund; $50,000 is required for the building to be erected. Plans and specifications are being considered.

CHARLESTOWN, MASS.—The City Council favor the appropriation for the construction of a new public library at Charlestown.

CHATTANOOGA, TENN.—Chartered: Chattanooga Station Co., with $100,000 capital stock, by H. Fonde, Thos. H. Cooke, H. S. Chamberlain, Robert Morrison and W. L. Frierson, for building depot for the Southern Railway and making other terminal improvements previously mentioned.

Jake Wells, of the Wells Amusement Co., plans the erection of a new theater here.

CHELSEA, MASS.—Proposals will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until 10 o'clock a. m., Feb. 6, 1906, and publicly opened immediately thereafter, for the construction of two quarters for officers at the U. S. Naval Hospital, Chelsea, Mass. Copies of drawings can be obtained upon application to the architect, Daniel Howard Woodbury, 53 State St., Boston, Mass., upon deposit of $5, $2.50 of which will be refunded upon return of drawings. Copies of specifications can be obtained upon application to the Naval Hospital, Chelsea, Mass., or to the Bureau of Supplies and Accounts, Navy Department, Washington, D. C. Applications for proposals should refer to Schedule 308. Blank proposals will be furnished upon application to the navy pay office, Boston, Mass., or to the bureau. H. T. B. Harris, Paymaster General, U. S. N.

The Doyle Athletic Club is considering the erection of a handsome new club house.

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CHICAGO, ILL.—Contract will soon be let for the new hospital building to be erected for the Chicago Polyclinic Hospital from designs by Architect R. E. Schmidt. The building will be located at La Salle and Oak Aves. It will be built of brick, stone and iron, and will have steam heat, electric light and the latest improvements in all lines. Cost will be about $150,000.

Architect A. Sandgren will have plans ready about Jan. 6 for a high-grade apartment building to be built on the west side of Drexel Boul., 199 ft. south of 49th St., for August Wallantin, of St. Paul, Minn. It will be 3-story, 100 x 120 ft., contain 16 apartments of seven and eight rooms each, and cost $80,000 to $90,000.

Frederick R. Barnheisel, president of H. H. Kohlsaat & Co., 1701 Wabash Ave., has leased the property at 291 to 297 Wabash Ave., 80 x 170.7 ft., with a 4-story building, and contemplates improving it by the erection of a mercantile building, to cost about $300,000.

Architect W. C. Zimmerman is preparing plans for a residence to be built on Sheridan Drive for R. J. Conway, Chamber of Commerce building. It will be 3-story, about 60 x 100 ft., of granite. Cost, about $75,000.

A permit was issued by the Department of Buildings to the Commercial National Bank for an 18-story bank building to be erected at Adams and Clark Sts.

Designs have been made by Architects Pond & Pond, for a club house for Hull House Association. It will be erected at Polk and Halsted Sts., and designs show 4-story building, 45 x 105 ft. The new building will have light brick and limestone front. Cost about $50,000.

Lawrence J. Reed, room 720, 138 Washington St., contemplates the erection of a residence at the southeast corner of Sheridan Rd. and Ardmore Ave. It will probably be 3-story, of stone and brick, contain 24 rooms and a ballroom, with all the latest improvements, and cost from $40,000 to $50,000.

The Board of Education has authorized the erection of a new 24-room school building at Perry and Granville Sts. Cost, $175,000.

The Chicago Automobile Club is planning the erection of a new club house.

CINCINNATI, O.—Col. J. A. Andrews, of Newport, has arranged for building on the southeast corner of 5th and Race Sts., a 10-story mercantile structure. Architect Harry Hake has completed plans.

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The American Architect and Building News

Vol. LXXXIX. SATURDAY, JANUARY 6, 1906. No. 1567.

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THERE is so much about the recent partial collapse of the roof of the Charing Cross station that justifies apprehension, that the hysterical condemnation of iron and steel delivered by a man of the standing of Mr. T. G. Jackson, R. A., is very unfortunate; for the general feeling seems to be that, first of all, the public must be assured that Mr. Jackson is absolutely and inexcusably wrong, while examination of this particular case was a quite secondary matter. It appears to be the general opinion that the failure was due to the snapping of the tie-rod of the bow-string arch that formed the second principal from the end of the train-shed. This allowed the crown of the arch to sag with its roof covering, drawing toward itself the next principal, and finally the wind-screen or glazed filling of the gable end of the shed, all giving way slowly until the lattice girder making the lower edge of the wind-screen was dragged from its support and fell; its fall sending over the brick walls upon which the roof trusses rested, and so finally allowing the wreckage to reach the ground. There is testimony that fifteen minutes elapsed between the moment when the tie-rod was heard, and seen, to part and the moment when the wreck was complete. This providential slowness of action is probably one of the reasons why the loss of life was not greater. For the moment this is enough to say about this particular accident.

BUT if we consider the accident as merely typical of possibilities, it becomes really alarming. Here was a roof built only forty-five years ago, a roof well built and well designed; yet, after less than half a century, it has failed, not through any vice of design, but solely through and because of vice or flaw in the particular material of which it was built. "Vice" seems the more proper term, since it is hardly fair to charge the disaster to any "flaw" of material or workmanship, the structure having endured for nearly fifty years. The rather startling lesson to be drawn from this accident seems to us to be this: Examination of the wrecked and unwrecked portion of the roofs is said to reveal the fact that the integrity of the members of the roof trusses had been impaired—in places seriously impaired—by oxidation; and, further than this, the structure gave evidence that it had not been properly cared for by the railway corporation. Now, if a great railway corporation which must, of course, understand the necessity of watching carefully over its metallic structures, and which has a large and competent force of engineers and mechanics constantly occupied in watching and caring for them, has allowed so important a structure as a great train-shed roof to get into such evil state as alleged, what is likely to be the condition of metallic structures of about the same age which have not throughout their term of life been under the eyes and charge of skilled observers? For fifty years the great English and American iron-works have been turning out and erecting, merely as so much merchandise, great metallic roofs, now scattered everywhere over the globe and sheltering all varieties of industries. Have these great roofs been, are they being, properly watched and cared for? Americans, who, familiar with the way their own railroads misuse their train-sheds, may think the Charing Cross roof was subject to an excess of sulphurous acid fumes from the engines' smokestacks, should remember that engines are not allowed to enter the Charing Cross station, and that consequently the metal-work was subjected to merely the general atmospheric conditions that prevail in London. Those inclined to support metal construction as nearly impeccable may be inclined to ask: "If metal construction has the vices that are alleged, why is it that there have not been more failures amongst the hastily-built, ill-designed and worse cared-for railroad bridges in America?" The answer is simply that the growth of traffic and the increased weight of rolling-stock have caused the replacing of the early bridges long before time and fatigue had developed the vices of their material. But there has not been the same reason for replacing the early roofs, and it may well be questioned whether some of them are still protected by a factor-of-safety.

THE Boston Society of Architects will very much regret having to take up arms against the new Mayor of Boston, whose first act it was to restore to their former positions the three members constituting the School-house Commission, so wrongfully deprived of office by Acting-Mayor Whelton during his short dream of omnipotence. For this exhibition of fair-minded good sense the Boston architects are properly grateful, and, as we say, it will be distasteful to them to oppose strenuously, as they must, what appears to be a pet project of the city's new official head. In his inaugural message Mr. Fitzgerald is so ill-advised as to revive, and warmly recommend for adoption, one of the most immoral schemes that have ever had birth in Boston. The possibility that the much-needed new city-hall should ever be erected on the already too small Public Garden cannot be contemplated by thinking men without indignation; but, fortunately, there are so many men of such different

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classes who are already indignant that, supposing the proposition could be referred to the public at once, it would be "snowed under" beyond recovery, in spite of the fact that the statute enabling, in 1859, the creation of the Public Garden expressly provides that "nothing herein contained shall render it unlawful to erect a city-hall in the Public Garden." This essentially permissive proviso would seem to make it quite possible for a Mayor who "does things," as Mr. Fitzgerald aspires to be, to take some practically irretrievable action in the matter, disguising his steps with the astuteness of the experienced politician. It is against such a surprise as this that the excellent Legislative Committee of the Boston Society of Architects must be peculiarly awake.

THE last time this immoral proposition was brought forward we pointed out that, since the city officials themselves seemed to acknowledge that there was no real reason why the city-hall must be in the very maelstrom of commercial activities, there was an ideal site which there were good reasons for selecting, in spite of its great cost. As our opinion is unchanged, we will recommend once more that there be taken, by right of eminent domain, by the Metropolitan Park Commission, subject to the city's right to erect upon some portion of it a municipal building commensurate with the city's needs and of dignity to befit its site, all that land to the north of the Public Garden bounded by Beacon, Charles, Mount Vernon and River streets. This site, if not beyond rivalry, would at least be an extremely good one for the building in question, while as a matter of urban improvement the result would justify the expense; for, by clearing away these blocks of old and low dwelling-houses not only the beautiful Charles River Basin would become a portion of the public landscape, and not be merely, as now, the private possession of cooks and maids living in the rear sides of Beacon street houses, but the River-bank Parkways of the Metropolitan Board would be married to the system controlled by the Boston Park Commissioners. Even if the land is not desirable for a city-hall site, we hold that it is pre-eminently a proper "taking" for the Metropolitan Park Commissioners to have under consideration.

IT is a poor rule that doesn't work both ways, and the Trenton, N. J., *Times* is only logical—and its logicalness throws an interesting side light on the architects' license laws—when it remarks: "When the architects begin to boycott the State and cities, it is about time for the Legislature to take a hand and repeal the act of 1902, which *creates a monopoly in architecture* in New Jersey." We italicize, merely to show that this New Jersey editor, at least, understands the real intent and meaning of these license laws, however much their beneficiaries may strive to disguise the disagreeable truth from themselves and from others.

WE take rather a personal interest in a "spite-fence" war that is just now raging in Cleveland, partly for the reason that the aggrieved party, Mr. T. F. Laist, was the first holder of the *American Architect* Traveling Scholarship, and partly because his enemy, if the allegations are true, seems to have done a very unhandsome and unusually mean thing, even for a millionaire. It is alleged that, finding that Mr. Laist, who had secured a ninety-nine-year lease of certain lots on Euclid avenue, could not be persuaded not to erect thereupon a "terrace" or apartment-house, now actually called the "Del Prado," his wealthy neighbor voyaged to Washington and there made known to the Supervising Architect that his representative at Cleveland during the construction of the new Post Office was engaged in speculative building. Now, whether Mr. Laist was merely exercising his unquestionable right to invest his own money as would any other capitalist, whether he was actually pursuing his professional vocation as an honest "sundowner" according to the accepted traditions of Government employ in Washington, or whether he had really transgressed the bounds of professional propriety, we do not know. But as the alleged complaint was laid about the time of the issue of the reform edict against "sundowning," it was only natural that Mr. Laist's dismissal should follow the filing of the complaint, and again it is only natural that he should oppose in every way the maintenance of a constant reminder of his injury in the shape of a "spite fence"—now threatened to be in steel, since a city ordinance forbids the building of a wooden fence near enough to the Euclid avenue line to allow of its doing all possible damage to the offending "Del Prado."

IN a recent issue of *La Construction Moderne*, M. Ravon, Secretary of the Committee on Jurisprudence, in answering an enquiry, incidentally opens our eyes to a possible further claim that high apartment-buildings may have to our abhorrence. In explaining the rights of co-proprietors of a building, M. Ravon points out that, while no one of them may at his will make alterations in those parts of the structure that the co-proprietors use in common, each of them may at his pleasure make all the changes that please him in those parts of the structure that belong to him, "provided that he does no injury to the stability of the building, nor causes any wrong to his co-proprietors." On Fifty-ninth Street and other places in this city, apartment-houses have been built, sometimes by groups of friends and sometimes by speculating builders, on such terms that the fee of the apartment—usually an entire floor—passed to the tenant. If, then, the French view of an owner's rights should obtain in this country, architects might find their "creations" improved, story by story, with the striated artistic whims of the proprietors of the several stories in question. This architectural bedlam seems a logical possibility—since at present there is, we imagine, no law against it—while as an artistic impropriety it is no more of a crime than the present aspect of any street in the city now offers to one who has regard for the unities of urban architecture. That this is so can be proved by imagining the aspect of the street, so far as color, material and mass go, if the buildings facing upon one block should be revolved vertically upward on the corner until their several vertical façades become but the horizontal fronts of the several stories of a single building.

NOTES ON REINFORCED CONCRETE.[1]

THE important element in all concrete is the cement. While the other ingredients, composing the most of the bulk, may be varied to almost any extent and are comparatively inexpensive, the cement is the binder upon the quality of which the strength of the concrete depends. Before the invention of Portland cement, the natural cements had been used for concretes for years, but on account of their slowness in acquiring strength, and the uncertainty of the resulting mixtures, the use of such concretes was limited to a large extent to mass work and filling. Upon the discovery of the process of manufacturing a cement which would set in a reasonable time, wet or dry, and would rapidly acquire a strength nearly as great as its final, began a development of construction in this direction, which is even now only in its infancy.

Engineers are apt to be conservative, even more so than architects. We are suspicious of innovations, and rightly so, for we cannot take chances in the construction of buildings, bridges, dams, etc., which are intended to last for generations, and upon the security of which thousands of lives depend. At the same time, we cannot all of us wait for somebody else to do the experimenting, and we should all share the responsibility of broadening the application of a worthy innovation. By carefully considering successful experiments in certain lines, we can often assure ourselves with sufficient positiveness that a slightly different application will be successful. It is in this way that the field of usefulness of concrete has widened and is now widening in constantly expanding circles.

During the phenomenal growth in the manufacture of Portland cement in this country during the past twenty years there naturally was evolved a great variety of specifications, so that one scarcely knew how to properly describe the material. This condition is now somewhat improved.

The first step in standardizing specifications was to devise rules for making tests. This work was undertaken by a special committee of the American Society of Civil Engineers, appointed several years ago, and the result of the labors of the committee in this direction was embodied in a report which appeared in 1903. This report described in detail a method of conducting every part of the work of preparing samples and conducting tests. It has been published in most of the engineering periodicals, and also by many technical societies, and is now pretty generally adopted throughout the counttry. It has become a general custom to specify that "all tests of cement shall be conducted in accordance with the recommendations of the committee of the American Society of Civil Engineers," and this clause may safely be inserted in any specification.

The next step towards correlating requirements was taken by the American Society for Testing Materials, which, by a committee, drew up a "Standard Specification" for natural and Portland cements, which was adopted by this Society about a year ago, and which has since been adopted by other engineering associations and is becoming more and more the type upon which American specifications are modeled. This specification, while fixing certain definite limits, allows some latitude in others, so that the purchaser can, if he like, call for a very high grade cement, or, if the work will warrant it, for a second-grade product, which will not develop quite as much strength, but may be used economically where the greatest strength is not required.

This fact points to the conclusion that cements are of different classes. This is undoubtedly the case. No dealer will admit that his brand is second-class, but it does not stand to reason that all can be the best, as the advertisements would have us believe. There are plenty of brands, however, that run so uniformly good that a failure in any test is rare, while there are others that should not be used for important work without rigorous testing.

Reinforcement in concrete work has many advantages, all based upon the fact that it strengthens the material in the one way in which it is deficient, namely in tension. Roughly speaking, concrete has from eight to ten times as much strength in compression as it has in tension; but the difference is really greater than this, because in the process of setting there is always a liability to cracks, which may be so minute as to be invisible, but which may wholly ruin its tensile strength. Moreover, in building concrete structures it is generally impossible to place the material continuously and not allow parts to become set before new material is joined to them. Where a setting joint occurs it is practically impossible to develop much tensile strength. It is therefore a safe rule never to count upon any tension in the concrete, but, wherever tension can under any circumstances develop, to use steel.

At first thought it may seem as if, in ordinary building construction, there would not be many places where tension would develop, but this is far from the truth. Of course, we all know that the lower surface of a beam or slab is strained in tension, and we readily admit that if concrete is used for such members, we must reinforce these parts. Do we also think of the fact, equally apparent, that every beam or slab that is made monolithic with adjacent beams or slabs is strained in tension at its top, over and near to the points of support? The overlooking of this important fact is accountable for more cracks in concrete construction than any other one cause. But there are other characteristics of concrete that produce tension—namely, shrinkage during setting and temperature changes.

The tendency to shrinkage cracks can be overcome by reinforcement, though the exact amount of steel necessary for the purpose is one of the questions upon which experimental research has thus far shed little light. It is conceded that if the area of steel in the cross-section amounts to one per cent. of the area of the concrete, it will surely prevent shrinkage cracks; but in most cases it seems likely that considerably less steel will accomplish the same result. It is safe to say, however, that shrinkage must always be reckoned with and allowed for, and we cannot be too careful in providing for it.

Tensile strains are produced by temperature changes, for the reason that concrete expands and contracts as the temperature rises and falls, to a much greater extent that many other materials of construction, such as stone, brick and wood. Its coefficient of expansion is almost exactly the same as that of steel.

The effect of reinforcing a wall is not to introduce an element with a different coefficient of expansion, but rather to give the material a tensile strength. The steel alone has sufficient elasticity to more than balance the temperature changes.

The effect of combining steel with concrete is apparently to give the latter a certain ductility. This effect is particularly noticeable in reinforced slabs. If a concrete slab without reinforcement is loaded it will break down suddenly before it has deflected appreciably. On the other hand, if the slab is reinforced, it will show an almost incredible deflection before it breaks or even before cracks appear. It has been held by some that the steel changes the character of the concrete in some mysterious way, so that the molecules flow and readjust themselves in a deformed position. M. Considère, the French engineer, has experimented by removing concrte from an overstrained test-piece, and found that it retained a considerable tensile strength. On the other hand, American experimenters have discovered minute cracks on the tension side of loaded slabs developing at deformations not far in excess of those which would have ruptured unreinforced beams. It seems most probable that the cause of the apparent ductility of the reinforced slab is due to the fact that, as long as the concrete adheres perfectly to the reinforcement throughout its length, no cracks can develop which are wide enough to be visible, though there may be an infinite number each of infinitely small extent. As soon as the steel begins to slip, however, which it most certainly will, about the time it reaches its elastic limit, the cracks will localize at the point of greatest strain, and will soon show themselves. A fact which points to this condition is that we never notice any cracking sound during a test of concrete slabs. It is always something of a surprise when we find the first crack that it has formed without our hearing it.

The bearing of this peculiar effect of the reinforcement in producing apparent ductility upon tensile strains due to temperature and shrinkage is that by using a sufficient amount of steel we can prevent entirely the localizing of cracks, and it is not probable that where cracks are kept so small as to be invisible they can be at all harmful.

The question frequently arises in large buildings whether it would not be better to provide expansion-joints where motion can take place freely. This method sometimes has to be resorted to, but it is beset with difficulties greater than might at first be imagined. The only way to make a true expansion-joint seems to be to make a complete physical separation of the two parts of the building, each standing on its own bottom, and with no members transferring shear across the joint. Naturally such joints must go through the outside walls and their architectural effect must be taken into account.

[1] A paper, by Mr. J. R. Worcester, C. E., read before the Boston Society of Architects, Dec. 5, 1905.

The applications of reinforced concrete to buildings are not confined to any one part, but may include practically the entire structure. It may almost always be used in foundations in one form or another, and for many types of foundation-work it is extremely valuable. In some locations also a great economy can be effected in the retaining-walls, by the thinning of which both materials and space are saved.

In connection with the use of reinforced concrete in foundations, a word should be said with regard to the danger to the steel of corrosion. When first it was proposed to use steel in such work, it was thought by many that the concrete, being more or less porous, would allow water to reach the steel and that it would be sure to rust. This fear has proved to be unfounded, and we can safely assume that where the reinforcement is well covered with the concrete it will not rust.

Reinforced concrete has been used to some extent for columns, and it has a field in this direction—within certain limits. The limitations, as they appear at present, are dependent upon two considerations, namely, the size of the columns, and the question of how much the concrete can be injured by fire.

With regard to size, we find that concrete columns are bulky, particularly in high buildings. For instance, in an eleven-story office-building in Boston, concrete columns in the first story would require an area of cross section of about 3 per cent. of the floor-space. That is, for a spacing of 15 ft. x 20 ft., they would need to be about 3 feet square. This clearly indicates a limitation in one direction. It must be admitted that authorities are not in very close agreement as to the allowable strains for columns, and we know that office-buildings to the height of sixteen stories have been supported on reinforced-concrete columns. The wisdom of this may be demonstrated later.

As to the effect of fire on concrete, it has been proved that a sufficiently intense heat applied to concrete through a long enough time will lessen its compressive strength. It was also shown in the Baltimore fire, that columns with reinforcement near the surface were liable to crack, along the line of the rod, from the heat of a conflagration. It is still a matter of debate whether sufficient heat can be generated by a fire within an incombustible building to injure the columns to the danger-point. If so, we clearly have another limitation to their use, for it must be borne in mind that a column is a more vital part of a high building than a floor, from the fact that the whole building depends upon a column, while only a limited portion depends upon the floor.

There are still other difficulties in the application of reinforced concrete to columns, though these are mainly of a practical nature and will undoubtedly be overcome as time goes on.

The above disadvantages are referred to, not to frighten architects out of the use of concrete in columns, but merely to warn them that there are a good many problems in this direction which have not been fully solved.

The use in beams and girders of reinforced concrete is not by any means as problematical as in columns. While the last word has by no means been said as to the wisest and best way to proportion these members, we know enough to proportion them with reasonable economy and with abundant assurance of safety. There is one requisite in the design of a building in which concrete girders and beams are to be used economically, and that is to allow sufficient depth. If you allow only as much as would be required for steel beams and their fireproofing, you are likely to get into trouble. You should have a little more, perhaps 3 or 4 inches. By wasting materials you can often get along with the same space, but only at the expense of materials and an increase of your dead load. Until recently one feature of the design of beams has been frequently overlooked, and that is the shear. This has resulted in a number of unnecessary failures. A steel beam is very rarely weak in shear, but a reinforced concrete beam is pretty sure to be, unless the designer provides for this strain. Concrete itself is only a little better in shear than it is in tension, and there is as much need of providing steel to withstand the one as the other. The shear that causes failure in this class of work is not the vertical shear, but the horizontal shear. The arrangement of steel which is adopted to resist the shear is not always the same. It sometimes takes the form of vertical stirrups, and sometimes a part of the horizontal steel is bent up towards the end of the beam in a diagonal direction. Sometimes both methods are employed.

The consideration of beams leads us to what is the most familiar use of reinforced concrete, and that is in slabs. A slab is nothing but a beam of which the width becomes so great as to fill all the space of the floor. This increase in width has the important effect that we usually have ample concrete to resist the shear without reinforcement. In slab construction the first use was made of reinforcement.

Many systems of reinforcing slabs have been devised and most of these systems are good, provided the amount of steel is proporly determined. There are, however, some features of the construction that must not be overlooked. The dealers in different forms sometimes make claims for their product that cannot be safely admitted. In calculating the strength of a slab, we must consider that the steel is concentrated at the centre of gravity of the metal, and this must be placed high enough above the bottom of the slab so that the whole of the steel will be properly fireproofed. In some cities it is required that there shall be at least 2 inches of concrete below the bottom of the steel. Here in Boston, however, this has never been required, but common prudence would dictate that there should never be less than three-quarters of an inch. It is also claimed that some bars are better than others because of their high elastic limit. Theoretically this is true, so far as the point where cracking will take place is concerned, but engineers are conservative about allowing greater strength to be figured for this reason: because the increased elastic limit is obtained either by stretching the bar by some process of distortion, or by using a high carbon street, either of which methods tends to produce brittleness and decrease the ductility.

As to the advantage of using a distorted bar on account of its greater grip on the concrete, it may be said that in slabs, there is very seldom a case where greater adhesion is necessary than will naturally occur between a plain section and the concrete.

A word should be said with regard to cinder-concrete in connection with slabs, for it is in this class of work that cinders are used. Cinder-concrete differs from stone in having for an aggregate a soft, light, porous material instead of a hard, solid, non-porous substance. The result is that it has a low crushing-strength, a low modulus of elasticity, and is liable to greater variations in strength on account of the difficulty of determining the quality of the cinders. On the other hand, cinder-concrete is fully as fireproof as stone concrete, if not more so; it is lighter, and it has the property of allowing a nail to be driven into it and holding the nail with considerable tenacity. As a result of these qualities, it is safe to say that while cinder-concrete may be used for fireproofing, in some cases for partitions and roofs and for filling, it should never be used for slabs having any considerable span or where subjected to any great strains.

The use of concrete in walls is attended with some difficulties, and at best does not show the same relative economy over other forms of construction as is met with in the case of floors. The difficulties are partly because the outside face of a wall must have some attention paid to its appearance, and if built in the usual way, with board forms put together, hit or miss, the appearance will not be pleasing. Another trouble is that where exposed to the outside air there is more effect from temperature-changes and shrinkage than in interior work. A third objection to this use is in the fact that, generally speaking, there is very little concrete in proportion to the amount of forms necessary, which means that the cost per cubic foot is high. Walls have sometimes been built of concrete without reinforcement, except possibly in the way of lintels over windows, the walls being laid as thick and heavy as they would be if built of brick, but in this sort of construction there is grave danger of cracks. Others have been constructed with reinforcement, both horizontally and vertically, using very thin walls between piers. They have also been constructed with a double thickness and a hollow space between. The reinforced walls have generally been found satisfactory, so far as danger from cracks is concerned, and so far as the writer is aware, no difficulty has been experienced from dampness when only a single shell has been used, though it is quite possible that there have been such cases. The double wall is supposed to be safer in this respect, and is generally unobjectionable except in the matter of expense.

Thus far we have been considering only walls made of monolithic construction. There is another type coming into use, and that is concrete blocks. These have been used in the West much more largely than in this vicinity, but they are gradually working into this region. There are a large number of patented processes for producing concrete-blocks, and it is said that

under favorable circumstances they can be made and laid up much cheaper than any other form of masonry.

Of course, by the use of blocks it is possible to avoid two of the greatest difficulties with monolithic construction, namely, the question of forms, which are wholly dispensed with, and the difficulty of surfacing.

In order to make this concrete-block construction reach its greatest economy, it would be extremely desirable if some general units could be decided upon for the dimensions of blocks, so that walls could be constructed without excessive cutting and fitting. If this were done, there is no doubt that blocks could be used to great advantage. As to the strength of these walls, it may be safely assumed that walls of the same thickness as brick can be made with very considerable hollow spaces and still have greater strength. It is quite possible that we shall get to using considerably thinner concrete walls than the present brick walls. Of course, in the block construction no reinforcement is used, and we do away with the danger of shrinkage-cracks, for the reason that each block gets its shrinkage while seasoning before being laid in the wall. Temperature-changes will, of course, take place, and this fact must necessarily be taken account of, though generally speaking any cracks from this cause would occur in the joints where they would be so minute as to be invisible.

Much has been said of late as to the relative economy of concrete construction compared with other forms, and if the cost of lumber goes on increasing we shall hear more in future. There are so many indeterminate quantities involved in this question that it is impossible to formulate any definite rules of general applications. We may, however, assume certain conditions and work out a comparison which sheds a little light on the subject.

Take, for instance, a steel beam 10 in. x 25 lbs. as a basis of comparison. This at 4c. per lb. erected, will cost $1.00 per lin. ft., if not fireproofed.

A hard-pine timber, to have equivalent strength according to the Boston Building Law, would need to be about 9½ in. x 14 in. This at $60 per M., erected, would cost 66½ cents per lin. ft.

A concrete beam by itself would need to be, with an economical proportion of steel, about 12 in. x 18 in., and would cost about 97 cents per lin. ft. If, however, the beam is monolithic with a slab floor, so that it forms a T section, the slab being say 4 in. thick, the portion of the beam below the slab might be 5 in. x 14 in., costing only about 52 cents per lin. ft.

The last system has the advantage over the other two of being fireproof. The steel beam can be made so, at an additional cost of, say, 20 cents per lin. ft., making its cost nearly three times that of concrete.

To carry the comparison a little farther, suppose this beam to be one in a mill-construction building, and compare the cost of the floor of one bay 8 ft. wide per lin. ft., using for non-fireproof construction 3 in. under-flooring and ⅞ in. finish, and for fireproof construction a 4 in. slab, including a granolithic finish. We find that the all-wood construction would cost about $2.46 *per ft. of bay;* the wooden-floor-steel-beam construction about $2.80; the all-concrete construction $2.85 per ft., and the steel beam with concrete slab, the beam being fireproofed, about $3.53. It should be noted, however, that in the last two cases, on account of the greater dead weight we have less capacity for live load. To bring them up to the same live capacity we should have to increase the cost of the concrete up to $2.99 and the steel to $3.83. This means that the concrete system would cost only about 6⅝ cents per square foot more than the cheapest possible construction and about 10½ cents less than the common fireproof construction.

In closing it may be interesting to speak of a few concrete buildings in this vicinity, from which it is possible to obtain a very good idea of the appearance of the work, and by keeping track of how they wear, we shall, in time, learn of the permanence of the construction.

There is a little building near the lower end of State street, built a little more than a year ago by the Aberthaw Construction Co. for the Boston Transit Commission, under Mr. E. L. Reed's superintendence, that is well worth a close inspection. It is only a covering for a stairway one story high, but it is very perfect in its execution. The reinforcement in this is complete. The walls are solid and monolithic, and the surface was obtained by picking and hammering.

At Beverly are the concrete shops of the United Shoe Machinery Co. These were built in 1903 by the R. L. Fosburg Co., beginning in the dead of winter. The construction is monolithic, with vaulted walls, and floors and colmuns are all of reinforced concrete. The surface of the outer walls was hammered. Mr. F. M. Andrews, of Dayton, O., was the architect.

In the summer of 1904, the Aberthaw Construction Co. built a contagious-ward for the Waltham Hospital, from Mr. E. L. Reed's design and under his supervision. This building is monolithic reinforced concrete, throughout, with vaulted walls, having a hammered surface.

During the last few months, the Eastern Expanded Metal Co. has constructed the Park Square Motor Mart for the Jordan estate, from the design and under the supervision of Mr. E. T. Barker. This is a notable building from the originality of the design. The exterior is covered with sheet metal, and so are the interior columns, which are cylindrical. These columns were cast into the metal shells which served as forms, though supported by a lagging of wood. There are some very long-span girders in the floors, and the interior fire-walls are made of reinforced concrete. No surfacing has been attempted on the interior concrete, it being left as cast in the forms.

At Brockton, the Eastern Expanded Metal Co. has also built, this summer, an eight-story office building for the Anglim estate, designed and supervised by Mr. J. William Beal. This is of reinforced concrete throughout, except for a facing of brick, and is of the skeleton type of construction, the walls being single thickness, monolithic, with thin panels between piers. A visit to this building would well repay anyone contemplating this type of construction.

PAINTING.[1]

A GOOD painter will often get better results with a fair paint than a poor workman will get with a praiseworthy one. The method of application is about as important as the quality of the paint used, for the reason that a layer of air and water which it may hold exists upon all surfaces. This layer of air prevents close adherence of the paint to the surface, and it can only be gotten rid of by thoroughly brushing the paint out onto the surface and into the body of the material underneath. A distinguished British painter and author writes: "The less paint that is put on at each operation, consistently with a proper covering of the ground, the better will the ultimate result be. Less paint and more painting," he impresses as a need "to quite 90 per cent. of his painter students." The personal equation always counts in painting as it does in almost everything else. From experiments with an ocular micrometer in connection with a microscope, we find that single coats of the same paint may vary in thickness from 1/500 inch to 1/1,000 inch. The variations in thickness from these extremes and intermediate points are due to the varying pressure of the brush under the hands of the painter. Much of the poor work done nowadays results from the quality of the tools purchased by or supplied to the painters. We insist that a good workman to do good work must have good tools to work with; that is, brushes not over 3½ inches wide and full or thick with good, stiff bristles. For the highest class of work we prefer what they call down East "pound brushes"—that is, round brushes with good, stiff okatka bristles in them, not less than 6 inches long. With one of these properly bridled, a painter can do more and better work in a day than it is possible for him to do with the ordinary flat brush that is usually furnished him, and which costs little less. The good workman will always pay special attention to the coating of edges, and those parts of a structure where water and dirt will lodge, and to the filling in of all crevices, beads and mouldings to prevent the incursion of water. These hidden parts are often the vital ones in bridges or in buildings of steel-cage construction, and they are those which should have the most vigilant and constant attention.

The durability of paint will be affected by the number of coats applied—*e. g.*, two coats of paint will wear better than one; three coats of paint will wear better than two and four coats of paint will wear better than three. The theory upon which we design coatings, both for wood and for metal, is, that the primer or foundation coat should be considered as structural material whose function is both to exclude air and moisture from the material underneath it and to form a receptive surface for subsequent coats. It is further our theory that in the sequence of coats this primer or foundation coat should dry more quickly and harder than any one covering it. Where it is desired to finish a structure in white, or in a light tint composed largely of a white

[1]Extract from a paper by Mr. Houston Lowe, read before the Engineers' Society of Western Pennsylvania.

pigment, we have reason to infer that it is wise to limit the number of coatings applied to three, exclusive of the primer; the reason for this limitation being that our knowledge includes no inert pigment which, when used alone with linseed oil, will have sufficient hiding power to serve as a satisfactory paint pigment. The consequence is that to produce a good paint in white or some light tint it is necessary to use pigments like white-lead or zinc-white that react with the oil and continuously weaken it until its power as a binder is finally destroyed. With paints made from inert pigments and linseed oil it is undoubtedly true that, provided a sufficient interval be allowed to elapse after each coat for it to dry and harden, the greater the number of coats and the greater the total thickness of the layer, the greater will be the degree of impermeability to air and moisture, and also the greater the degree of resistance to atmospheric influences.

Linseed oil in drying takes something from the air—viz., oxygen—and gives off something to the air—viz., carbon-dioxide and water. Mulder describes the process beautifully and calls it "the breathing of the drying oils." The things favorable to the drying of oil paints are light, pure, dry air and moderate artificial heat. The things unfavorable to the drying of all paints are a humid atmosphere, darkness, noxious gases and low temperature. The amount of time which should be allowed to elapse between coatings of any given oil-paint will vary so much with the location of the structure, the kind and condition of the surface, the quality of the paint, the atmospheric conditions when the painting is done, and for the first few days after it is done, that it is obvious no set period of time can be named. However, a painter who is interested in his work can always determine whether one coating is fit to receive another by noting its lustre, the time when the paint no longer sticks to the dry skin of the finger, and the time when the layer cannot be moved under heavy pressure. Blistering, cracking and peeling of paint are often due to the fact that under-coats were too elastic when they were painted over. If a piece of work be painted coat upon coat of oil color before each coat is sufficiently dry, the movement and shifting of the under-coats in their effort to obtain oxygen for their proper hardening will either rupture—*i. e.*, crack—the top coats or lift them up in the form of blisters. Pearce, in his excellent book on painting, says that four days is not too much to allow for the proper drying of oil color which will nominally dry in twenty-four hours. The period may be shortened by additional driers; but a good rule is to allow all paint to stand four times as long as it takes to arrive at superficial dryness.

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ILLUSTRATIONS.

NO. 213 MAYO STREET, RICHMOND, VA. MEASURED AND DRAWN BY MR. G. R. TOLMAN, ARCHITECT.

MAYO STREET before the war was one of the principal residential streets of Richmond; but, fallen from its former rank, for many years this quarter has been inhabited by colored people, always poor and sometimes virtuous.

If this house has any particular history, diligent inquiry has failed to reveal the fact. The exterior is simple and well proportioned; an air of respectability and reserve pervades it, that quality which succeeding generations of builders and "Arketeks" were unable to see or feel.

The entrance has a charming character of its own: it gives to a well-proportioned oblong hall, enriched with dado, plaster cornice and coffered ceiling. The stairs in the rear are screened off by curved-topped, slatted, double swinging half-doors, harmoniously disposed by a reversed curve under an elliptical arch.

These stairs, 3' 7½" wide, light and fragile as they seem with their three-inch square turned columnar newels, in height equal to the stair width, stand firm and strong to-day. All this in spite of the fact that daily and nightly for years drunken men and women have crawled up and down them, heeling from port to starboard, with tacks loose and three sheets in the wind—the hand-rail and slender balusters serving as their mainstay or parent stem from which they radiated in more or less graceful curves. One may conclude that their stability (I refer to the stairs) is due to the fact the balusters are inserted into the rail in such a manner that the longway, 1¼ inches, is perpendicular to the sectional axis of the rail, thereby giving more base and bearing. The drawings will more fully explain this, also the well studied manner by which the rail is carried over the newels on the half-landing of the flight which, together with the ramp up to them, make a continuous hand-rail from story to story.

The well-proportioned standing-finish throughout is hand-wrought, in portions varying slightly in detail each fitted to its place. The muntins and stiles of windows are unique as to their moulded surface, giving a pleasing effect and style of their own to the whole window.

The frieze panels over doors and windows to parlor and dining-room are decorated by wood-carving executed by a free and knowing hand, conventional in treatment yet showing the characteristics of each type, so that they may be readily identified. Whether executed on the solid or applied, there was no way to ascertain, as removing the paint for any considerable area was out of the question. It is slightly undercut, and the fact that none has come away is a bit of evidence for its solidity. The freely rendered oak leaves, for instance, hardly ever repeat themselves exactly, but all swing together as an harmonious whole, showing the undulations of the leaves in keeping with their character without imitating nature too closely. The doors had narrow stiles, with the wide lock-rail usual to the Georgian period. This wide rail, by the by, gives a unity of feeling to the whole door.

The door and window caps are particularly simple, but graceful and pleasing, their heavy projection and broad top would give a natural resting place for rare plaques and other decorative features, a very sensible and appropriate place to put such things when one has no private museum attached to his house. The plaster cornices, light and expressive, were placed in all the rooms of first and second stories, evidently to emphasize their form, thereby fulfilling one of the elementary principles of good decoration. Why this familiar feature of the Georgian period is not more frequently developed by modern architects one fails to understand. Simple, direct, and American by long residence, capable of almost infinite variation, it is a logical motive suggestive of a purpose, and not of a château in France or castle in Spain.

It may be noted there are but two rooms upon a floor, yet the impression made upon the visitor is not of a cramped tenement but a spacious mansion, due entirely, I think, to the well-proportioned parts and attention given to scale in the unity of the whole.

The dumb-waiter in the dining-room was too small to pass up a roasted turkey, but ample for a few black bottles, unless the guests were all four-bottle men, then they could come up in relays and the darkeys could do the rest—they always had plenty of them and they could be relayed also.

From this dining-room one could pass out onto a very broad two-decked piazza or "gallery," by two windows so arranged with swing-doors at bottom as to afford ample head-room: from the gallery there were steps leading down to the back yard.

The kitchen was under the dining-room and connected by door and opening in wall, evidently to pass food through, with a room to the front, which may have been a breakfast-room or childrens' dining-room. From this room there was a small lobby giving to a side entrance, from the passageway, thence by steps up to the street level, all this floor being on a level with the back yard. There were brick quarters for the servants in the yard, which contains a tree of a century's or so growth, evidence of the age of the premises.

This estate was on a high land breaking away into a steep bluff directly in the rear. One could overlook the Shockoe Creek Valley, a small tributary to the James, the windings of that river and the hills beyond. There always being a breeze blowing up from the river on the hottest days, the site is cool and comfortable.

Not far from the junction of Shockoe Creek and the James River was formerly a natural stone platform serving as the only landing in dead water for boats coming up the James, as the river forming the southern boundary of Richmond was full of falls and rapids. Here the Indians gathered and all the early pioneers of this section. This point has long since been filled up; while the creek serves as a handy sewer, the bluff, valley and hills remain.

While this house may not form a large section of frozen music, it exhibits marks of design and must have had an intelligent maker, it never was palatial, but in its old age it plainly shows it has been what it professed to be, a comfortable, attractive American home.

STAIRCASE AND MANTELS IN SAME HOUSE.

DINING-ROOM DETAILS IN SAME HOUSE.

SKETCH DESIGN FOR CHRIST CHURCH, WEST HAVEN, CONN. MESSRS. H. M. CONGDON & SON, ARCHITECTS, NEW YORK, N. Y.

THE church is designed to be built of local stone plastered inside, with an open-timber roof and cypress trim. Seating capacity 410 in the nave, 34 singers and 8 clergy in the choir, and in a "nun's gallery" over the north chancel aisle there is room for an auxiliary choir of a dozen or more women; the organ being placed in a similar gallery opposite. Cost about $35,000.

ROOD AND CHAPEL SCREENS: PLATES 10-17.

THE screens of S. Petronio, Bologna, range from the later Gothic to the middle Renaissance. The earlier screens are similar in comparison to that of St. Mark's and, as in that example, colored marbles are employed. But in S. Petronio some polychrome decoration is also used.

In the few early examples of Rood-screens in Rome, all Gothic influence is lacking and the most conspicuous example of chapel screens—that in the Vatican—is quite Classic in detail and composition.

The marble screen in the Sistine Chapel, the illustration of which composes the greater part of this number, was built in 1473 from the designs of Baccio Pintelli. The chapel in which it stands, the Capella Sistina, is so called from its builder—Six-

tus IV. The room is oblong in shape, being 133 feet long by 45 feet wide; the choir occupies over two-thirds of the chapel.

The walls beneath the windows were originally hung with tapestries worked from the "cartoons" of Raphael, but are now painted with representations of hangings. The upper part and ceiling contain a series of remarkable frescos by the most famous artists of the fifteenth century who were employed by the Pope to decorate this private chapel in a manner which indicates, to-day, the lavish use of wealth by the Church at that period.

The artistic value of these frescos and their place in the history of art make the casual observer indifferent to the beauties of the gallery and the screen, the only architectural decoration in the room. The screen, designed by Baccio Pintelli, the architect of the chapel, is about 45 feet long and 12 feet high. The bronze grille, filling the panels between the pilasters, has been removed to allow a better view for the "student" and the "personally conducted."

The historian may be able to explain the hiatus in the development of the church screen in Italy, for there are but few examples of the late Renaissance, and the scant Rococco examples vary greatly in type. The illustration shown, from Naples, is in the usual style, though free in detail, but the barrier at Brecia —it cannot be called screen—is a mere assembly of sculpture, a product of the wildest Rococco imaginings. W. T. P.

NOTES AND CLIPPINGS.

Granite from India.—It is said that India is to come into the market as a granite exporter, and that the employment of labor at sixpence a day will enable the material to be produced at a cost far below that at present ruling even in Norway and Sweden. The report appears to have originated in the fact that the Bombay Port Trust have resolved to use granite quarried in the southern portion of the Presidency for the entrances to the docks in that port. It is, however, a long step from the supply of merely local requirements, to an export trade upon a profitable basis, especially when it is borne in mind that the freight of granite from Europe to India is frequently as much as the first cost of the material itself, and labor in India, although it is to be had at an exceedingly low price per day, is so ineffective as to be very costly when the amount of production is taken into account. It should never be forgotten that the cost of labor per hour or per day is only one of the factors of cost. The real test is the cost of production—in other words, the efficiency of the labor employed. The principal benefit obtained by the introduction of lavor-saving appliances is the increase of the efficiency of labor. One of the disadvantages of a low labor cost per hour is that the introduction of labor-saving machinery is discouraged, and although it is frequently argued that the development of labor-saving machinery tends to the decay of the handicraftsmen, yet it cannot be gainsaid that the countries in which machinery has obtained its greatest developments are just those in which wages are the highest per day with a cost of production relatively low.—*Stone Trades Journal.*

Death of the Sculptor Armstead.—Mr. H. H. Armstead, R.A., the well-known sculptor, died early in December, aged 79. His two most important works were the sculptured decorations on the Colonial Office in Whitehall and the southern and eastern sides of the podium of the Albert Memorial; for the latter he designed eighty-four life-sized figures in marble, representing the musicians, poets, sculptors and painters of the Italian, German, French and English schools and other "ideal" statues. He did the external stone sculptures at Eatington Hall, Warwickshire, the carved oak panels in "The Queen's Robing Room" at Westminster Palace, the marble reredos in Westminster Abbey, the great fountain in King's College, Cambridge, the statue of Lieutenant Waghorn at Chatham, and numerous statues and busts. "His work had monumental character and simplicity, and will always be remembered as belonging to the front rank of British sculpture," says Mr. M. H. Spielmann.—*Builders' Journal.*

Work of Repairing St. Mark's.—The work of restoration at St. Mark's is going on satisfactorily. The scaffolding supporting the Apocalypse vault, which was most in danger, has been completed without injury to the decoration. The pillars of the tribune and the chief walls have been protected and supported. The preservation of the basilica is now insured.—*N. Y. Tribune, Jan.* 1.

Copper Sulphate Fails to Purify Water.—The statement comes from Manila, Philippine Islands, that the copper sulphate method of water purification has failed there. It will be remembered that a member of the Government's scientific staff at Washington made great claims for this substance as a safe and effective disinfectant for public water supplies a few months ago. Dilutions as high as one part per million were, he said, effective. The Bureau of Government Laboratories at Manila is reported to have gone into the subject very carefully and has found that even in strengths of 1 to 150,000 the copper required four hours to stop the growth of cholera germs. It was not considered safe to use this concentration in water drunk day after day by persons of all ages, so the method has been discarded. It is suggested that the failure at Manila, after its apparently successful use on water supplies in this country, may be due to some peculiarity of the water there, and that copper sulphate can only be effectively used on waters of certain compositions. It will be remembered that experiments made some time ago in England also seemed to discredit Mr. Moore's claims.—*N. Y. Globe.*

The "Christ of the Andes."—The placing of a colossal statue of Christ on the Andean border between Chile and the Argentine Republic, 14,000 feet above the sea, occurred March 13, 1904. The base of the statue is in granite. On this is a granite sphere, weighing some fourteen tons, on which the outlines of the world are sketched, resting upon a granite column 22 feet high. The figure of Christ above, in bronze, is 26 feet in height. The cross supported in his left hand is 5 feet higher. The right hand is stretched out in blessing. On the granite base are two bronze tablets, one of them given by the Workingmen's Union of Buenos Ayres, and the other by the Working Women. One of them gives the record of the creation and erection of the statue; on the other are inscribed the words: "Sooner shall these mountains crumble into dust than Argentines and Chilians break the peace to which they have pledged themselves at the feet of Christ the Redeemer."—*Boston Transcript.*

The Art of Cross-examination.—A Devonshire architect was a witness in a county court dispute as to "ancient lights." The gentleman in question deposed that the light alleged to have been diminished was really as good as ever, and in proof of his assertion he said he went to the locus in quo with a very small print book and could read it easily.

Up rose counsel in cross-examination, and the following dialogue ensued:

"Have you it?" Witness: "Yes."

"What is it?" "The New Testament."

"What part of it did you read?" Witness: "'Woe unto you also, ye lawyers.'" (St. Luke, xi., 46.)

Amid laughter the cross-examination came to a speedy close.—*Sheffield Independent.*

Quartz Glass.—Glass that can be heated white hot and then plunged into cold water without breaking would seem an impossibility, but it has been recently made an accomplished fact. It is made from Brazilian quartz pebbles heated red hot and then thrown into distilled water. Then the purest pieces are selected and welded with the oxyhydrogen blow-pipe into long stems like straws, from which glass vessels of any shape can be made. Thus far this quartz glass has been employed chiefly for making laboratory apparatus. A test-tube, however thin, made in this way will not break when a white-hot coal is dropped into it.—*Stone Trades Journal.*

The Yerkes Japanese Room.—To procure a Japanese room, says Mr. Will H. Low, the late C. T. Yerkes sent W. B. Van Ingen, a well-known decorative artist, to Japan with the exact measurement of the room to be decorated in Japanese fashion. Mr. Van Ingen consulted with the best authorities, and the result was a room built entirely over there, taken apart and brought here, with half a dozen artist artisans, who put the room together here. It is a very remarkable specimen of an excellent type of modern Japanese art.

Bronze Statue of Hendrik Hudson.—Mr. Francis Bannerman has offered to erect at his own expense on Polopens Island, at the entrance of Newburgh Bay, a bronze statue of Hendrik Hudson, 30 feet high. His proposition was accepted by the Executive Committee of the Hudson Tercentenary Committee.

The Library of St. Mark, Venice.—The corner of the famous Sansovino Palace, containing the royal library, which was cut by the collapse of the Campanile in July, 1902, has been perfectly restored, without requiring the demolition of that part which was thrown out of place.

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an 8-story building, suitable for a department store, on the northwest corner of 6th and College Sts. Tietig & Lee will prepare the plans.

The ordinance providing for the erection of the proposed new city hospital here at a cost of $1,750,000 has been approved. The Cincinnati Sanitarium, at College Hill, will erect an addition to the hospital costing $50,000. The Board of Education has planned the erection of five new school buildings to cost $325,000.

Plans have been completed, it is said, for a 10-story office building, to be built on the northwest corner of 4th and Main Sts., for Henry Burkhold.

Plans are in progress for a residence for Louis P. Fick on Madison road. The property has a frontage of 215 ft. and is 400 ft. deep. Tietig & Lee, Cincinnati, are architects.

Plans are in progress for a $100,000 building on Gilbert Ave. for the Emerys. Jos. G. Steinkamp & Bro. are architects.

It is reported that land has been purchased in Clifton, a Cincinnati suburb, for the site of the new Union Hebrew College. Work on the new grounds will begin immediately and the buildings already planned will require an outlay of more than $200,000.

Architects Boll & Taylor have submitted plans to Building Inspector Tooker for an opera house to be erected on the north side of 7th St., by John J. Ryan. It will be of steel, brick and concrete construction, 67 x 111 ft.

CLEVELAND, O.—Lehman & Schmitt, architects, of Cleveland, O., will furnish the plan for the new Miami County court house, to be erected at a cost of $280,000.

It is reported that John D. Rockefeller will donate his Euclid Ave. and Case Ave. homestead for the purposes of a $1,000,000 music hall, and also that he will make a handsome contribution towards the cost of the building.

CLINTON, IOWA.—The Turners of Clinton are planning the erection of a new Turner Hall.

COLUMBIA, VA.—George J. Stoneman, cashier State Bank of Columbia, will receive plans and estimates on a 2-story brick bank and office building.

Plans and specifications have been prepared by architects Richards, McCarty & Bulford for the new office building to be erected by Peter Merkle on the site of the old St. Paul A. M. E. church. The building is to be of brick construction with pressed brick front and terra cotta trimmings.

COTTER, ARK.—The members of the Masonic Fraternity at Cotter are planning the erection of a Masonic Temple.

CUMBERLAND, PA.—It is reported that the Baltimore & Ohio Railroad Co. will erect a passenger depot here soon.

The Interstate Trust & Guaranty Co., it is reported, will erect an 8-story bank and office building, 50 x 90 ft., of steel fireproof construction.

The Davenport Commercial Club will erect a new club house here.

The Elks of Davenport plan to erect a new building here.

DEADWOOD, S. DAK.—It is reported that J. C. Burrichter will erect a new theater here at a cost of $60,000.

DERRY CHURCH, PA.—The Philadelphia & Reading Railway Co. has plans for a new depot at this place.

DETROIT, MICH.—Rev. Father James Savage of the Most Holy Trinity Church, here, is planning the erection of a handsome new club house for the men and boys of the parish.

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Donaldsonville, La.—G. A. Gondram has organized a company for the erection of an opera house here.

East Orange, N. J.—Plans have been drawn for a Masonic Temple to be erected by the Hope Lodge No. 124, F. and A. M., estimated to cost about $50,000.

Elkhart, Ind.—John W. Fieldhouse is planning to establish a new theater at Elkhart.

Elkins Park, Pa.—J. H. & T. W. Dagney, Oak Lane, Philadelphia, want subbids for a 3-story gate lodge, at Elkins Park. Stone, slate roof, open plumbing, mantels, tile work, plate glass, gas fixtures, etc.

Fergus Falls, Minn.—A dormitory for nurses will be erected at the State Insane Hospital, to cost $75,000, and new cottages for the contagious ward, to cost $5,000.

Fort Michie, N. Y.—All bids recently opened for the construction of a hospital at Fort Michie, N. Y., have been rejected. No further action has yet been taken.

Galesburg, Ill.—It is reported that the Chicago, Burlington & Quincy Railroad Co. will erect a new passenger station here at a cost of $150,000.

Geneva, N. Y.—The New York Central will soon build a handsome new station at Geneva.

Gibbstown, N. J.—It is reported that the Catholics of this city intend erecting an edifice and parochial residence.

Hanover, Pa.—The Reformed Congregation of Hanover, Pa., will erect a chapel in the spring. Address Mr. A. R. Brodbeck, Hanover, Pa., for information.

Harrisburg, Pa.—Plans have been completed by the Pennsylvania Railroad Company for the erection of the large freight station to be located at 2d St. and Meadow Lane.

The great Camp of Pennsylvania of the Order of Maccabees, at Harrisburg, have decided to erect a new home for aged and infirm Maccabees. The announcement has been made by S. S. Foultz, supervising deputy of Eastern Pennsylvania.

Hartford City, Ind.—The Masonic Lodge of Hartford City is planning the erection of a new Masonic Temple there. Lawrence Forkner is one of the officers of the lodge.

Hazleton, Pa.—It is reported that the Lehigh Valley Railroad Co. will erect a new passenger station here.

Hillsboro, N. Dak.—Bids are asked by the County Auditor of Trail County until 2 p. m. Jan. 8, for erecting a new court house. Buechner & Orth, St. Paul, Minn., are architects.

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Hoboken, N. J.—Revised plans have been completed for a new school building at 2d and Monroe Sts., Hoboken, N. J. Building will be brick and stone, 2-stories, 125 x 135 ft., and will have 22 class rooms. Eugene Ciccarelli, of Hoboken, is architect.

Huntsville, Tenn.—The Elks of Huntsville will erect a handsome new opera house here to cost $75,000.

Huron, S. Dak.—A new government building is being planned for Huron.

Indianapolis, Ind.—George J. Marott has ordered plans and will soon ask for bids for the construction of a business block or department store on Massachusetts Ave. on the Enterprise Hotel site. The building will cost about $175,000.

Ithaca, N. Y.—Syracuse University will build an 8-story business block at Ithaca. Plans are being prepared by Prof. Earl Hollenbeck of the department of architecture. Floor of iron construction, upper stories of brick and terra cotta.

Congressman John W. Dwight, of Dryden, has introduced a bill in Congress calling for an increase of $40,000 in the appropriation made a few years ago for the building of a new post office in this city on the lot at the corner of Tioga and Buffalo Sts. The total cost to be $110,000.

Jacksonville, Fla.—Bids are asked by the Board of Public Works until 3 p. m. Jan. 26, for furnishing all labor and material for the erection of a jail. Philip Priolean is engineer.

Plans and detailed specifications have been about completed in the office of Henri L. Reinholdt, Jr., architect, of this city, for a hotel to be erected here. Designs show a 4-story building, measuring 210 x 320 ft. It will be built of brick and stone, finished in hardwood and provided with latest improvements.

Kentland, Ind.—The County Commissioners of Newton County are planning for the erection of the new court house at Kentland, the county seat.

Knoxville, Tenn.—Isaac Purcell, of Philadelphia, Pa., will prepare plans and specifications for proposed edifice to be erected by the Second Presbyterian Church.

Kokomo, Ind.—It is reported that a new church is contemplated for the local Catholic parish. Rev. Francis Lordman is interested.

Louisville, Ky.—Architects Kenneth McDonald and W. J. Dodd are preparing plans for the department store building to be erected at 4th and Walnut Sts., for the Stewart Dry Goods Co. Seven stories, 180 x 108 ft. Cost, $400,000.

Louisville, Ky.—The construction of a $50,000 flat building on Third Ave. and Broadway is proposed by Clayton S. Longes.

Lewiston, Ill.—A new Carnegie Library will be erected at Lewiston.

Little Rock, Ark.—The City Council has provided for a new $150,000 city hall here, and the remodeling of the city hospital.

Logansport, Ind.—William Randall, former manager of the local Crystal Theater, proposes to erect a new theater here.

Logansport, Ind.—Judge D. D. Dykeman is planning to erect a $75,000 hospital with a $100,000 endowment in this city. The building will be a gift to the city by Mr. Dykeman in memory of Mary Dykeman, his deceased wife.

Lafayette, Ind.—Dr. George W. Switzer, president of the Y. M. C. A., announces that bids will be received on Feb. 22, 1906, for the erection of a $60,000 building in this city. J. F. Alexander & Son, architects.

Mrs. C. B. Stuart has purchased a site adjoining the Home Hospital and has ordered plans for a building for a home for aged people and a building to be used for nurses employed at the hospital. Mrs. Stuart will make the city a gift of these buildings.

Malone, N. Y.—A bill has been introduced in Congress asking for an appropriation of $75,000 for the purpose of erecting a government building in this city, to be used as post office, customs office, etc.

Marshall, Mo.—The Chicago & Alton Railway will erect a new passenger station at Marshall.

Mason City, Ia.—The question of a new federal building for Mason City is being discussed.

Memphis, Tenn.—Plans by R. H. Hunt, Chattanooga, Tenn., have been adopted for edifice previously reported to be erected by the First Baptist Church, A. U. Boone, pastor; cost $60,000.

Middletown, O.—McCarthy & Ward, of this city, are considering the erection of a new theater here.

Mineral Wells, Tex.—A site has been purchased here by Major Beardsley, of Gibsland, La., and an 8-story steel and fireproof cement stone hotel, to cost between $300,000 and $400,000, will be erected.

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Minneapolis, Minn.—Plans for the erection of the new main building for the State University have been prepared by Architect Clarence H. Johnson, St. Paul, Minn. The foundation has been completed and work on the superstructure will be started in the spring. Cost, $400,000.

Mobile, Ala.—It is reported that the Southern Railway has secured site for the erection of proposed freight depot, 1,000 x 120 feet. H. B. Spencer, Washington, D. C., is general manager.

The Gulf Terminal Co. has obtained a permit for the erection of a union passenger station on Beauregard, between Royal and St. Joseph Sts. Cost to be $250,000.

Monticello, Ind.—Rickman & Sons, of Kalamazoo, Mich., have been awarded the contract for the new school building at a cost of $60,000.

Morristown, N. J.—It is reported that the $75,000 municipal building is a certainty for Morristown. Mayor Reed can give information.

Natchitoches, La.—Administrators of State Normal School have adopted plans for proposed 4-story building; cost, $80,000. B. C. Caldwell is president.

National Military Home, Kan.—Bids are asked by Major W. W. Martin, Treasurer, until noon Jan. 9, for all material and labor necessary in the construction of chaplain's quarters except excavating, grading and basement walls.

Newark, N. J.—Proposals are invited and will be received until Jan. 31 at the office of Cass Gilbert, architect, 79 Wall St., New York City, for the purchase and removal of the old Essex County court house at Newark, N. J., in accordance with specifications, which may be obtained from the architect. The right is reserved to accept any bid or to reject any or all bids. By order of the Essex County Building Commission. Leslie D. Ward, president.

New Haven, Conn.—The plans of Architects Gordon, Track & Swartwout, of Fifth Ave., New York, have been approved by the building committee for the new Connecticut Savings Bank, to be erected at the corner of Church and Crown Sts. To be 60 x 100 ft., and equipped with every modern office convenience. A steam heating apparatus will also be installed.

A new armory, to cost $35,000, is to be erected here for Troop A.

New Orleans, La.—Contract has been awarded for construction of proposed club house for Young Men's Hebrew Association; fireproof construction, two stories, 120 x 175 ft.; billiard room, gymnasium, natatorium, etc.; auditorium to have seating capacity of 2,500. Stone Bros. and Emile Weil, architects.

The building committee of the Young Men's Gymnastic Club, it is stated, has adopted plans for a 6-story club house, which it proposes to erect at a cost of about $120,000.

New Rochelle, N. Y.—Architect Frank Marion Wright, New York City, has prepared plans for a residence, 40 x 85 ft., to be built here. Cost, $35,000.

Newark, O.—Architects Richards, McCarty & Bulford, of Columbus, will soon award the contract for the new 10-story steel and brick fireproof office building to be erected in this city by the Newark Trust Co.

New York, N. Y.—Bernstein & Bernstein are preparing plans for a 6-story flat, 50 x 86.11 ft., for Harris Maskin, 103 Fourth Ave., to cost $50,000, on 144th St., west of Seventh Ave.

Geo. Fred Pelham is making plans for a 6-story flat, 50 x 87.11 ft., for Felt & Malakoff, 19-21 W. 116th St., to be erected on 96th St., west of Columbus Ave., to cost $50,000.

Parnass & Dellon will build on the east side of Lenox Ave., west of 142d St., a 6-story flat, 50 x 85 ft., to cost $50,000. Geo. Fred Pelham is making plans.

H. Levin, 1411 Madison Ave., will build on the north side of 117th St., 169 ft. west of Pleasant Ave., a 6-story flat, 50 x 87 ft., to cost $50,000. Bernstein & Bernstein, architects.

The Mutual Construction Co., 551 E. 134th St., is still open for estimates on roofing, plumbing and plumbing fixtures, trim and mantels, dumb-waiters, electric work, plastering, painting, gas fixtures, hardware, etc., for the two tenements on the south side of 173d St., 100 ft. east of St. Nicholas Ave., from plans by J. H. Amsler. Approximate cost, $70,000.

Frederick C. Zobel is preparing plans for the erection of an 11-story fireproof, steel frame loft and office building, 50 x 92 ft., which he will erect at Nos. 32-34 West 20th St. No contracts have yet been awarded.

Charles Lieberman, Trinity Ave. and 156th St., will build at the northeast corner of 156th St. and Trinity Ave., Bronx, 6 stories, brick, stone flat, with 38 apartments. He is still open for estimates on various lines of material and equipment. Estimated cost, $100,000.

Separate contracts will be let for interior fixtures and equipment for the publishing house to be erected at 20-24 Vesey St. for the *Evening Post*. Robert D. Kohn is architect, and Marc Eidlitz & Son, 489 Fifth Ave., are the builders.

Plans have been approved by the Building Department for a new store and lodge building, which is to be erected on the east side of Fifth Ave., 51 ft. south of 11th St., for Mrs. E. R. Harbough, 449 Park Ave. Dehli & Howard are the architects and plans show a four-story building, 50 x 95 ft. It will be built of brick and stone and have steam heating, electric lighting, etc. Approximate cost, $50,000.

The property at the southwest corner of Washington Ave. and 160th St. will be improved by the erection of a modern flat house to contain 31 apartments. Schwartz & Gross and B. W. Marcus are the architects. Plans provide for a 6-story building, 32 x 102 ft., to be built of brick and stone and to have all improvements. Approximate cost, $200,000.

Architect Samuel Sass has prepared plans for a flat house for Morris L. Weiss, 613 E. 16th St. It will be erected on the south side of 49th St., east of Second Ave. Plans provide for a 6-story building, 56 x 87 ft. Approximate cost, $50,000.

It is reported that Architects Moore & Landsiedel are preparing plans for four apartment houses to be erected on Amsterdam Ave., between 111th and 112th Sts. Approximate cost, $400,000.

Architects Welsh, Smith & Provost, 11 E. 42d St., have prepared plans and specifications for a residence to be erected at 611 Fifth Ave. for Wm. Hall's Sons, speculative builders, 39 E. 42d St. The building will be 5 stories high, measuring 20 x 100 ft., of fireproof construction and will have the latest improvements and appliances.

Plans have been approved by the Building Department for the bank and apartment house to be erected at 20 and 22 Union Sq. for the Union Square Savings Bank. Henry Bacon, architect. Approximate cost, $300,000.

Bids are being received by Shickel & Ditmars, architects, for the new 12-story loft building at 207-217 W. 24th St., for the Frammer Realty Co. Size, 85 x 125 ft.

Plans are in progress for a 5-story loft building on Bridge St., New York, for the C. Van Nostrand Co. Reinforced concrete, 50 x 75 ft. Cost, $75,000. William Higginson is architect.

Plans have been completed for an 8-story brick tenement house for Johnson, Kahn & Co., 344 W. 72d St., New York, at 72d St. and West End Ave. Size, 70 x 87 ft. Cost, $150,000. J. E. Scharsmith is architect.

Gordon & Dushman, New York, are the owners of the proposed four 5-story flats at 175th St. and Amsterdam Ave. Cost, $302,000. H. T. Howell is architect.

C. F. Bond, Inc., 136 Liberty St., New York, has been awarded the general contract for the extensive alteration at 37 W. 53d St. He desires bids on all sub-contracts. Barney & Chapman are architects.

Plans are complete for a 6-story tenement house for the Moorehead Realty and Construction Co., 718 E. 142d St., New York. H. T. Howell is architect. Cost, $60,000.

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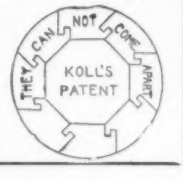

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sive alteration to the old A. T. Stewart store at Broadway and 9th and 10th Sts., owned by the A. T. Stewart Realty Co. and leased to John Wanamaker. The three Broadway entrances are to be enlarged, seven passenger elevators will be installed, new staircases erected and windows improved. D. H. Burnham & Co., Chicago, Ill., are architects.

Plans have been completed for a new 6-story and basement building for the New York Red Cross Hospital on 100th St. and Central Park West. Size, 34 x 66 ft. Cost, $60,000. R. N. Anderson is architect.

Work will start immediately on the reconstruction of the new Delaware, Lackawanna & Western R. R. Co.'s new terminal at the foot of W. 23d St. The framework will be of steel. Much of the metal in the former building is serviceable. The new structure will be as nearly fireproof as it can possibly be made.

Plans have been filed for a 6-story flat at 109th St. and Amsterdam Ave. for the Lester Realty Co., of 2790 Broadway. Geo. F. Pelham is architect. Cost, $56,000.

Janpole, Werner & Janpole are taking figures on a new apartment house on 178th St. and St. Nicholas Ave. J. Hauser is architect. Cost, $75,000.

Plans have been filed for two 6-story flats and stores, 49 x 87 ft., for Berlinger & Greenberg, 335 E. 6th St., New York. Bernstein & Bernstein are architects. Cost, $100,000.

It is reported that W. H. Stutchbury, 144th St. and Park Ave., New York, will erect two large apartment houses at 179th St. and St. Nicholas Ave.

Charles T. Barney, 71 Broadway, is reported to be interested in the construction of 12-story office building on the site of the old Brunswick Hotel on Fifth Ave., between 26th and 27th Sts., New York. The cost will be $1,000,000.

Plans have been filed for a 6-story brick apartment house at 160th St. and Fort Washington Ave. H. T. Buhnan is owner. Schwartz, Gross & Marcus, 35 W. 21st St., New York, are architects.

The erection of a $300,000 dormitory is being considered by the trustees of Barnard College.

Plans have been filed for an $85,000 6-story chapel hall at 334 and 336 W. 20th St., for St. Peter's Episcopal Church. It will have a facade of brick and terra cotta trimmings.

It is reported that Architect George W. Keister will prepare plans for the new vaudeville theater which M. R. Bimberg will build in Harlem, in the vicinity of 125th St. and Fifth Ave.

Plans have been filed with the Superintendent of Buildings for a new 6-story building to be erected in Central Park West, just south of 100th St., for the New York Red Cross Hospital, of which Wm. T. Wardell is president. The facade will be of brick and limestone. It is to cost $60,000. R. N. Anderson is the architect.

NORFOLK, VA.—Hofheimer Bros. will erect an addition to the Fairfax Hotel, at a cost of $50,000.

The Victoria Hotel Co. has been chartered and will erect a 6-story brick and stone hotel, 57 x 157 ft. Cost, about $100,000.

OSWEGO, N. Y.—It has been voted to erect a new $50,000 school building here.

The Board of Trustees of the Oswego Hospital and the Medical Board adopted the plans for the new hospital as prepared by Architect Williams, of Ogdensburg. Estimated cost, $40,000.

PEORIA, ILL.—It is reported that the German Fire Insurance Co. has purchased the Rouse Block and will erect thereon a 12-story office and bank building, to cost several hundred thousand dollars.

PERU, IND.—Lehman & Schmitt, architects, of Cleveland, will furnish plans for the new $280,000 court house to be erected in Peru.

PHILADELPHIA, PA.—A new bank building will be erected at the northwest corner of 18th St. and Girard Ave. for the Girard Ave. Title and Trust Co., recently organized. George W. Roydhouse is the president of the company. It is proposed to erect a brick and stone structure, to cost about $50,000.

Permit has been granted by the Bureau of Building Inspection for a new edifice for the congregation of the Belmont Ave. Baptist Church at Belmont, Westminster and Merion Aves. Plans show a 2-story structure of stone, 77.3⅛ x 99.10 ft. Jacob Waschold, architect.

Representative McCreary has introduced a bill in the House of Representatives providing for a $2,500,000 custom house for Philadelphia.

It is reported that a three-million-dollar family hotel is to be erected on the site of the Beth Eden Baptist Church. Local and New York interests, headed by Henry Ives

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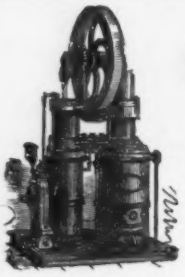

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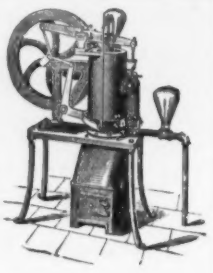

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Cobb, an architect, of New York, have purchased the property, and estimates will soon be called for. The hotel will be a 15-story, fireproof structure.

Pittsburg, Pa.—It is reported that Architect F. J. Osterling's plans for the Third United Presbyterian Church, to be erected on Northumberland Ave., Squirrel Hill, have been accepted. The new edifice, it is estimated, will cost $100,000.

It has been announced that H. C. Frick and others are interested in the erection of the proposed new 25-story hotel to be built on Frick's Cathedral property site at Fifth Ave. and Grant St.

Pittsfield, Ill.—A new Carnegie Library will be erected at Pittsfield.

Plainfield, Ind.—The Red Men's Lodge, at Plainfield, is planning the erection of a new hall. No names mentioned.

Ponca City, O. T.—Ponca City Board of Education will open bids Jan. 22 for erection of 2-story brick school building on Block 43, Hartman addition to Ponca City. Information as to form of proposal, specifications, etc., may be obtained at the store of George H. Brett, Ponca City, or S. A. Layton Co., architects, El Reno, O. T. Usual rights reserved; John Given, clerk.

Quincy, Mass.—Bids have been received for the $100,000 addition to the high school building here. A. H. Gould, Boston, Mass., is architect.

Readville, Mass.—The New York, New Haven & Hartford Railroad Company has selected a site here for the erection of new locomotive repair shops to cost about $1,200,000. Edward Gagel, chief engineer, New Haven, Conn.

Reno, Nev.—Sealed proposals will be received at the office of Supervising Architect, Washington, D. C., until 3 o'clock p. m. on the 10th day of January, 1906, and then opened, for the construction, complete, of the U. S. Post Office at Reno, Nev., in accordance with drawings and specification, copies of which may be had at this office, or at the office of the postmaster at Reno, Nev., at the discretion of the Supervising Architect. James Knox Taylor, Supervising Architect.

Riverside, Cal.—The Women's Clubhouse Association, of Riverside, are planning the erection of a new club house there.

Roanoke, Va.—At Roanoke it is stated the Leath Theatre Co. has under consideration the erection of a theatre.

Roswell, N. Mex.—Architect Clenman W. Fisher, of Worcester, Mass., is preparing plans for a theater to be built in Roswell, by Dr. Julius Garst, of Worcester, Mass. A large business block will be erected in conjunction with the theater.

Rutherford, N. J.—Plans are in progress for a school on Pierpont and Chestnut Sts. Size, 100 x 100 ft. D'Oench & Yost, New York, are architects.

Seattle, Wash.—The Young Women's Association has engaged Architect Thomas R. Kimball to plan its building, which will be erected at the southwest corner of 17th St. and St. Mary's Ave.

Sioux City, Neb.—The Garretson Hotel building, the largest in this city, is to be remodeled into a modern office building at an estimated cost of $50,000. No definite action has been taken by the corporation which controls the property, and work will probably not commence until next spring.

Springfield, Ill.—Charles Ashauer is drawing plans for the new opera house to be erected in this city.

Springfield, O.—The Big Four will erect a new passenger station at Springfield, to cost $200,000.

Springfield, O.—It is reported that the Cleveland, Cincinnati, Chicago and St. Louis R. R. Co. is contemplating the erection of a new passenger depot here. Cost, probably $200,000.

St. Louis, Mo.—The Anheuser-Busch Brewing Association is negotiating for the purchase of property at the northeast corner of 9th anad Pestalozzi Sts., opposite their plant, on which they propose to erect a large fireproof office building for their use. Architects Widman, Walsh & Boisselier, Wainwright building, will probably have charge of the plans.

C. M. Dolph, 515 Olive St., will erect a 5-story slow combustion mercantile building at 1123 Locust St., to cost about $60,000.

Plans have been prepared for the new Pilgrim Congregational Church to be erected at Union and Kensington Aves., at a cost of $185,000. It is to have an auditorium with a seating capacity of 1,155.

The Germans of this city intend erecting a club house, estimated to cost about $90,000. The structure will be of brick and fireproof.

Syracuse, N. Y.—The congregation of the University Ave. Methodist Church at East Genesee St. and University Ave. is planning the erection of a new church. Cost, $100,000.

Temple, Tex.—Plans have been received at Temple for the new Masonic Temple to be erected there by the Knob Creek Lodge No. 401, A. F. & A. M.

Toledo, O.—William Kirtley, Jr., president of the Ohio State Board of Public Works, is urging the movement to secure $75,000 for the erection of a new building for the use of the National Newsboys' Association, here.

J. H. Ammons and H. T. Dubois, of Marion, Ind., have purchased a site here for the construction of a new vaudeville theater in this city.

Toledo Railways and Light Company will soon build a large interurban station at Toledo.

Toronto, Can.—It is reported that the Shea interests will erect a splendid new theatre on a site on the southeast corner of Victoria and Richmond Sts., at a cost of $200,000.

Trenton, N. J.—George E. Poole, Capital building, Trenton, New Jersey, is preparing plans for a 3-story and basement fireproof printing house, 25 x 75 ft., for the Trenton Times, to be erected at 218 E. State St., Trenton. No contracts have yet been awarded.

Uniontown, Pa.—The Exchange Hotel was burned and it is announced that it will probably be rebuilt in the spring. Cost, $80,000. Address D. J. Johnson, owner and manager.

Utica, N. Y.—It is reported that Shubert Brothers intend to spend $200,000 in connection with the erection of a new theater in this city.

Walker, Minn.—The State sanatorium for consumptives will be erected in the spring at a cost of $50,000.

Washington, D. C.—Townsend & Haskell, New York, are preparing plans for T. F. Walsh's proposed office building. Clark & McMillen, 20 Broad St., New York, are the electrical engineers.

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Harry Wardman has contract to erect apartment house for C. F. Norment, after plans by A. H. Beers, 717 14th St., N. W.; to be 94 x 97 ft., of mill construction, equipped with steam heat, combination gas and electrical fixtures, and cost $60,000.

John S. Larcombe, 808 17th St., N. W., it is reported, has contract for the erection of proposed $130,000 gymnasium for the Georgetown University.

Bids are asked by Elliott Wood, Superintendent, until Jan. 17, for the entire cut stone work for the rotunda section, office building of the House of Representatives.

Sealed proposals for the erection of residence for the apostolic delegate will be received by Rev. D. I. Stickney until 10 a. m. Jan. 4. Plans can be seen at the office of architect, A. O. Von Herbulis, 1416 F St., N. W., after Dec. 28; approximate cost about $100,000.

Watertown, N. Y.—It is reported that the New York Central will erect a $250,000 freight house in this city.

Wheeling, W. Va.—$100,000 has been raised for the new Y. M. C. A. building to be built at Wheeling. Dr. J. L. Dickey is interested.

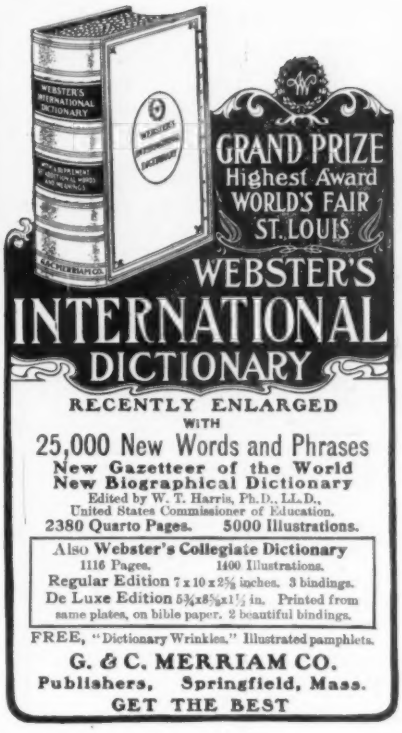
Wichita, Kan.—Plans for the new Catholic cathedral have been completed at Wichita. The edifice will be 180 x 80 ft., with towers at each corner, on the front 185 ft. high. The building will be of basilica style and will cost when completed $150,000.

Wilmington, N. C.—Q. F. Garrell has bought ground, 81 x 179 ft., on which it is his intention to erect a 6-story apartment house. Cost, $100,000.

A new building is to be erected in connection with the Homeopathic Hospital here. Mrs. E. W. Weldin is President Board of Managers.

Winsted, Conn.—It is reported that Carl Stoeckel, of Norfolk, will erect a large concert hall in this city, on the grounds of his home, Whitehouse, estimated to cost about $100,000.

Winston, N. C.—Frank P. Milburn, Columbia, S. C., is preparing plans for building, 90 x 160 ft., to be erected for the Forsyth County House. Steam heat will be installed.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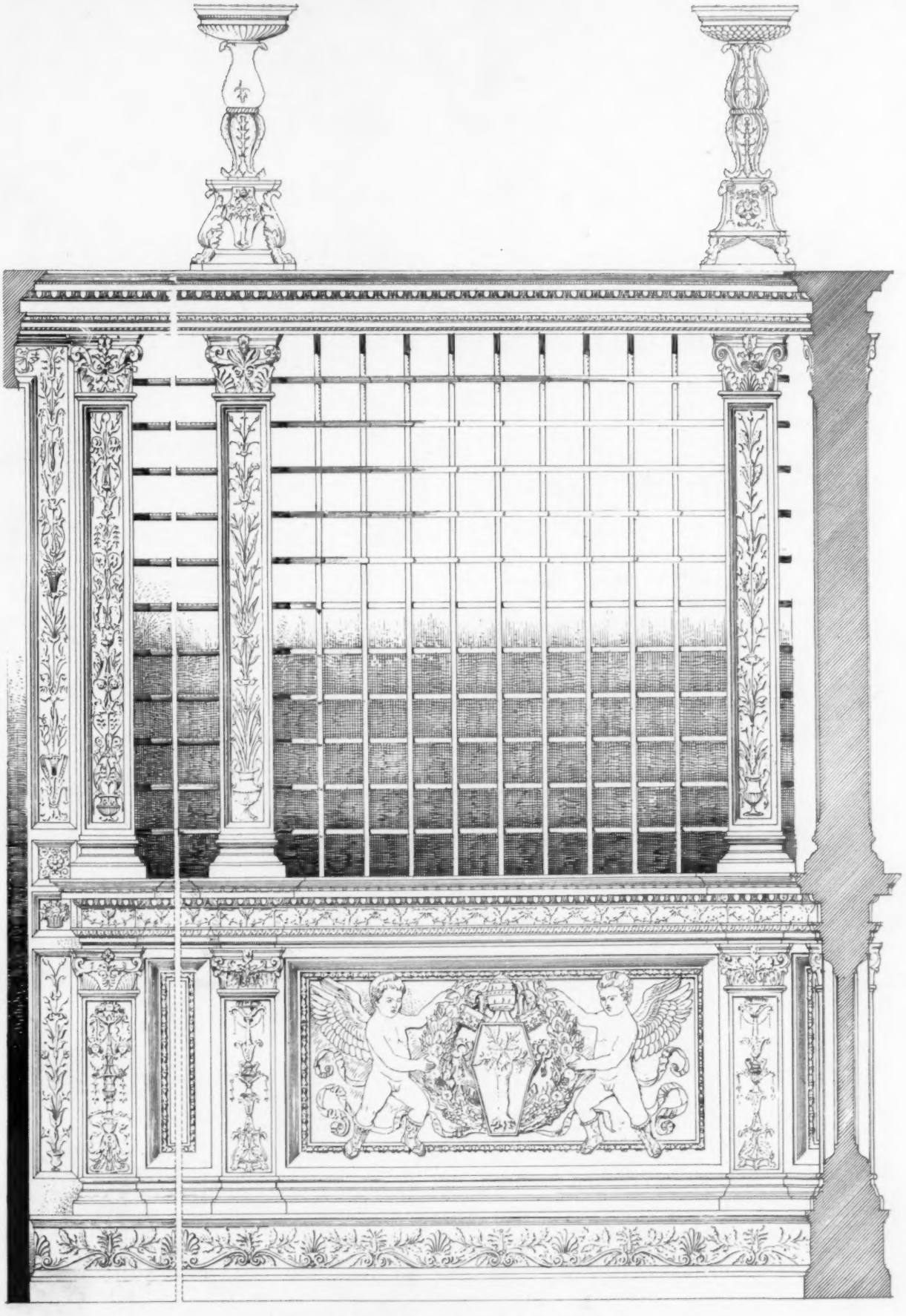

SCREEN IN THE SISTINE CHAPEL IN THE VATICAN, LOME, ITALY.

[After Letarouilly.]

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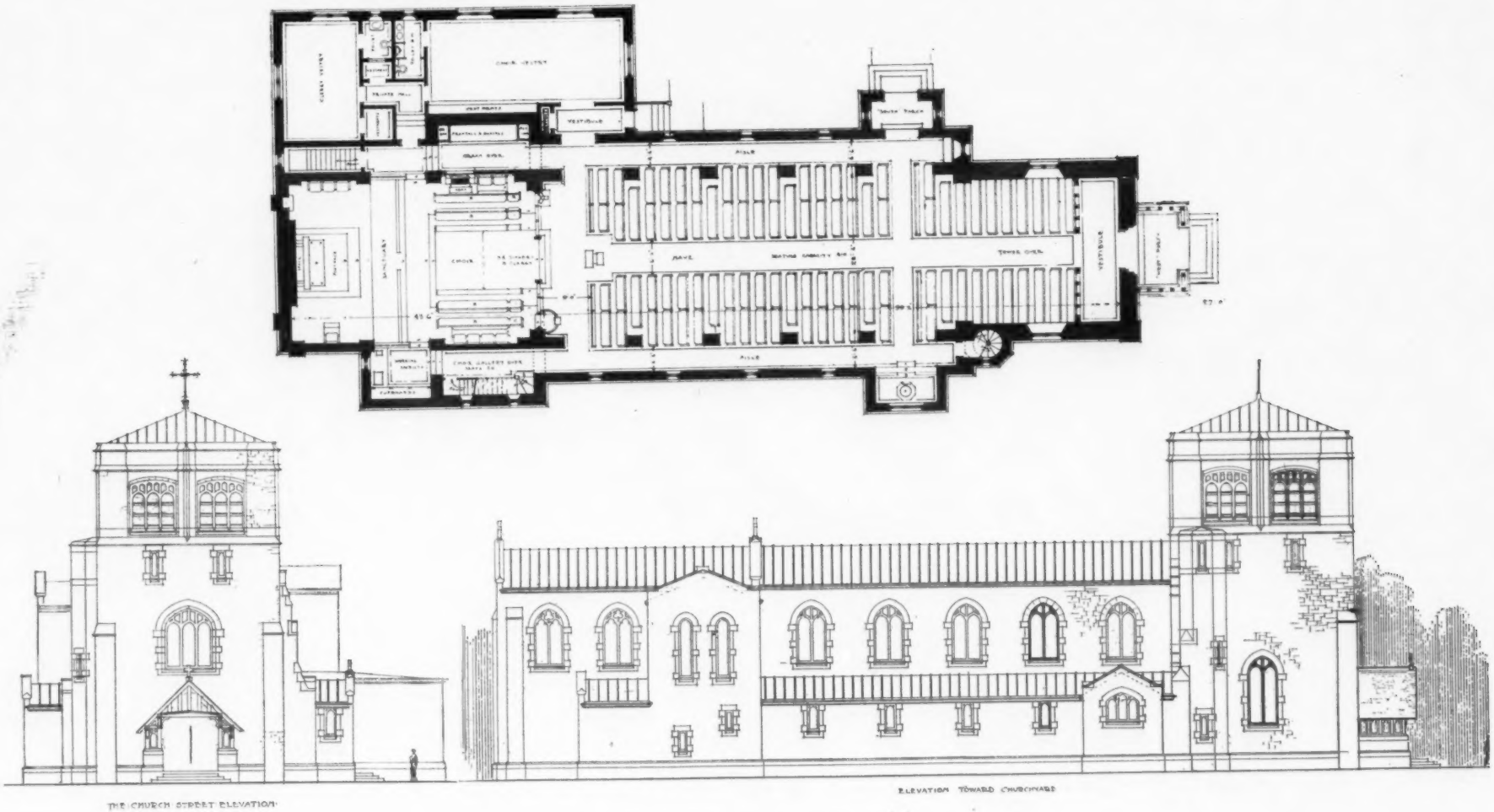

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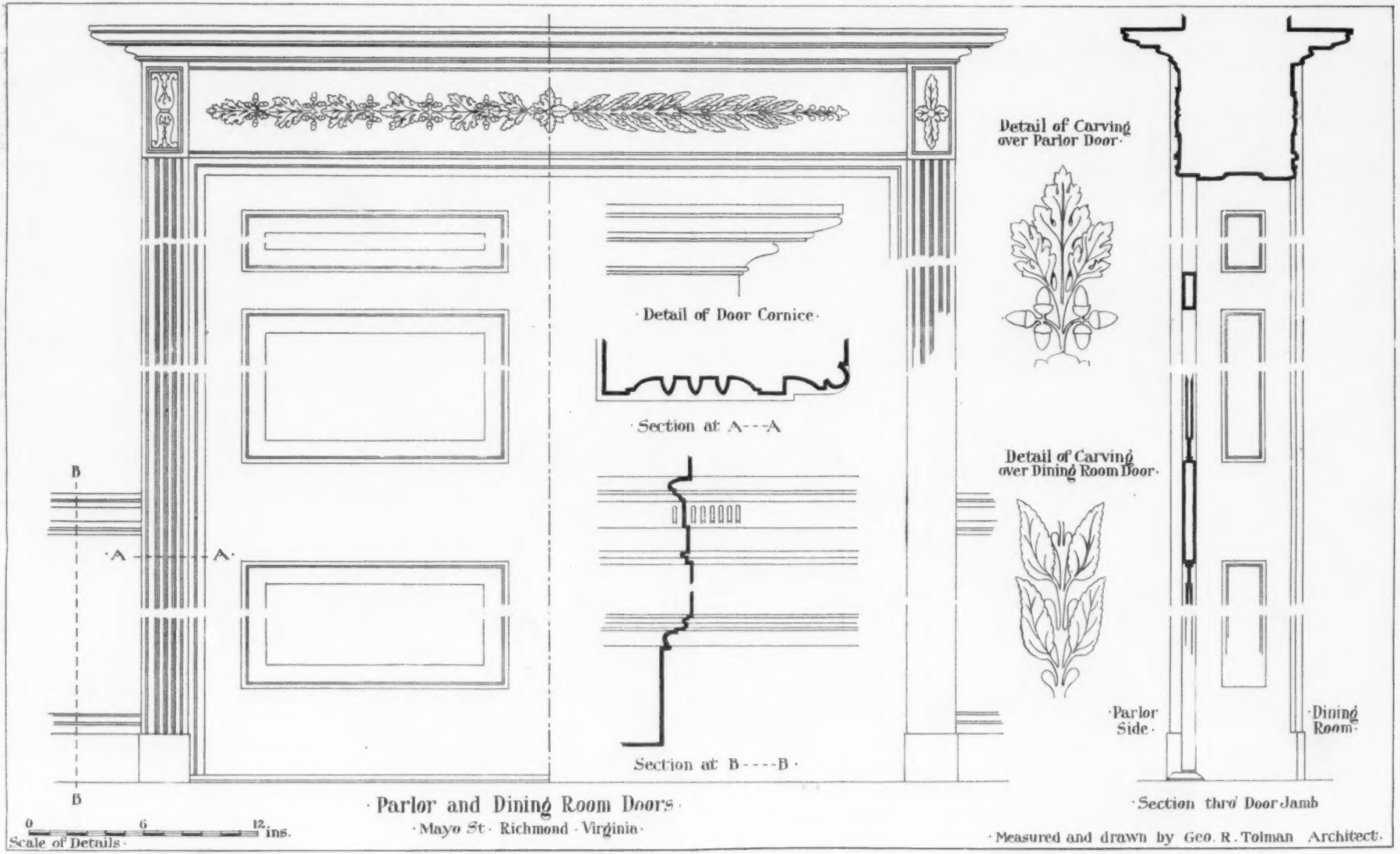

Parlor and Dining Room Doors

Mayo St. Richmond Virginia

Section thro' Door Jamb

Measured and drawn by Geo. R. Tolman Architect.

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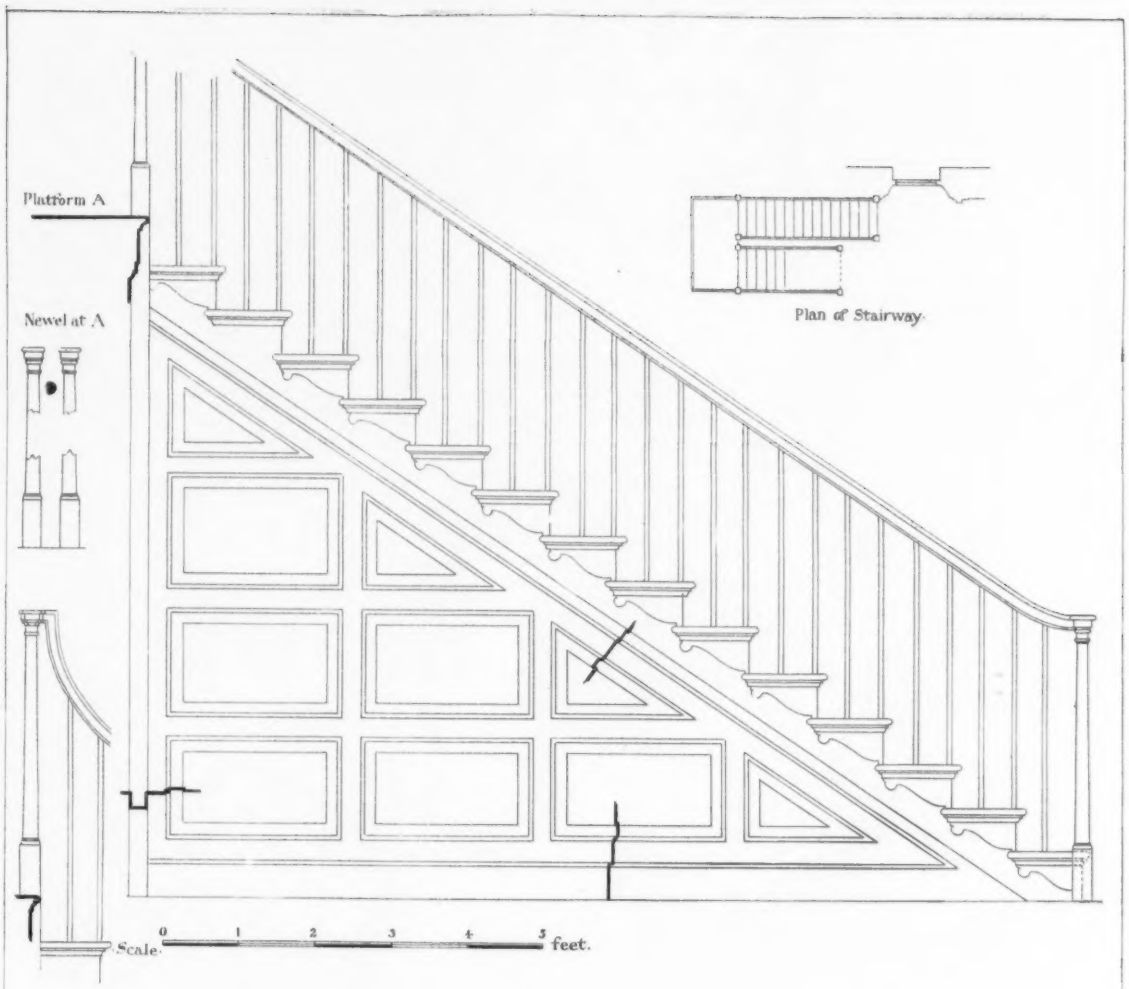
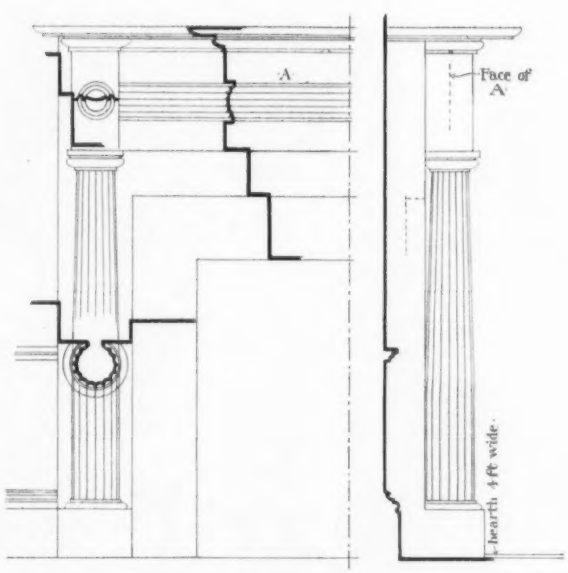
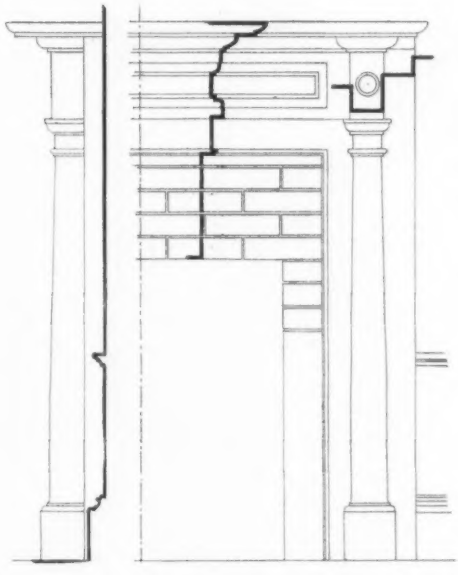




Parlor Mantel · Grey marble · black veins ·



Second Story Front Chamber · Wooden ·

Staircase and Mantels · 213 Mayo St · Richmond Va ·

Scale for Mantels · 1 2 3 ft.

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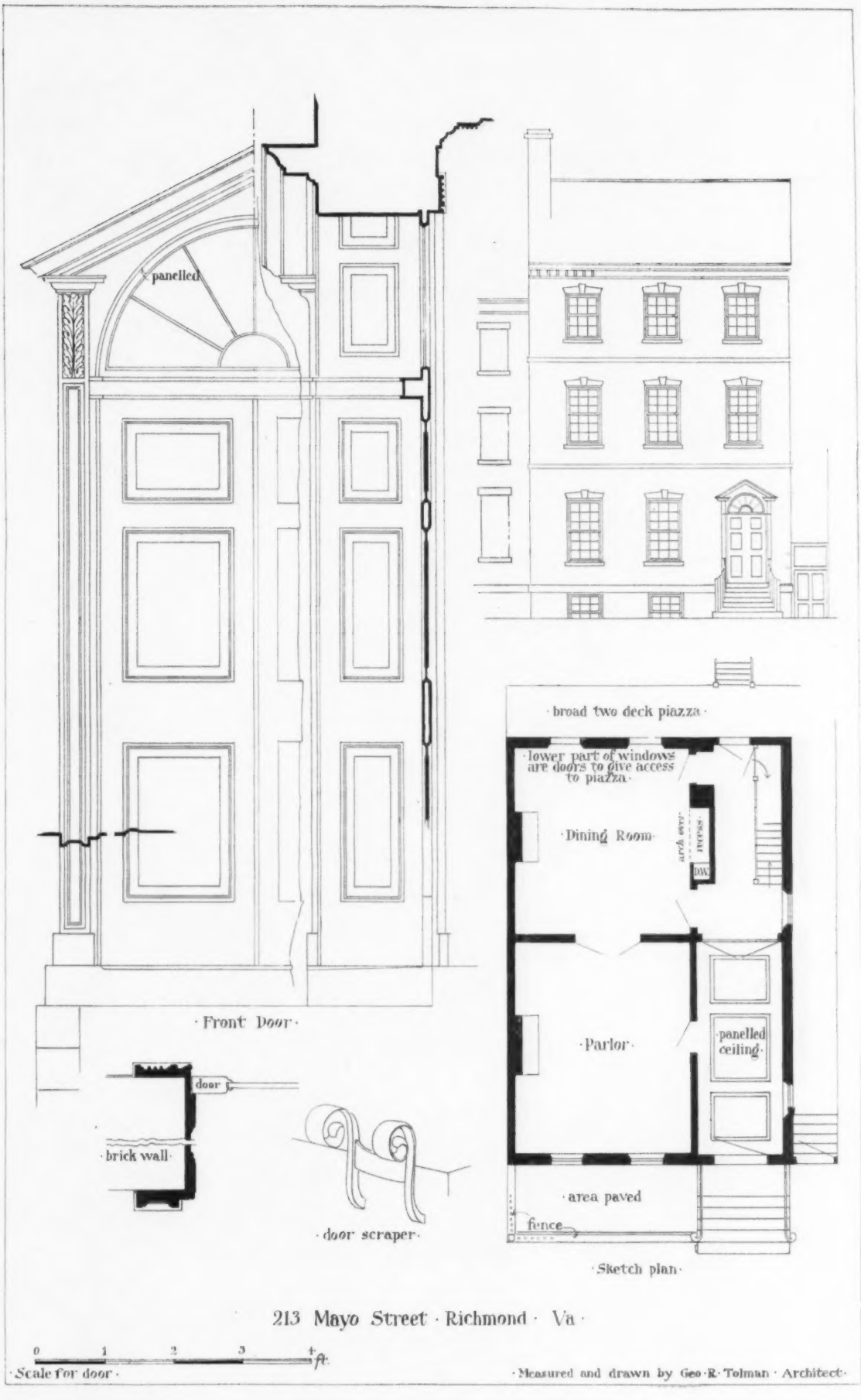

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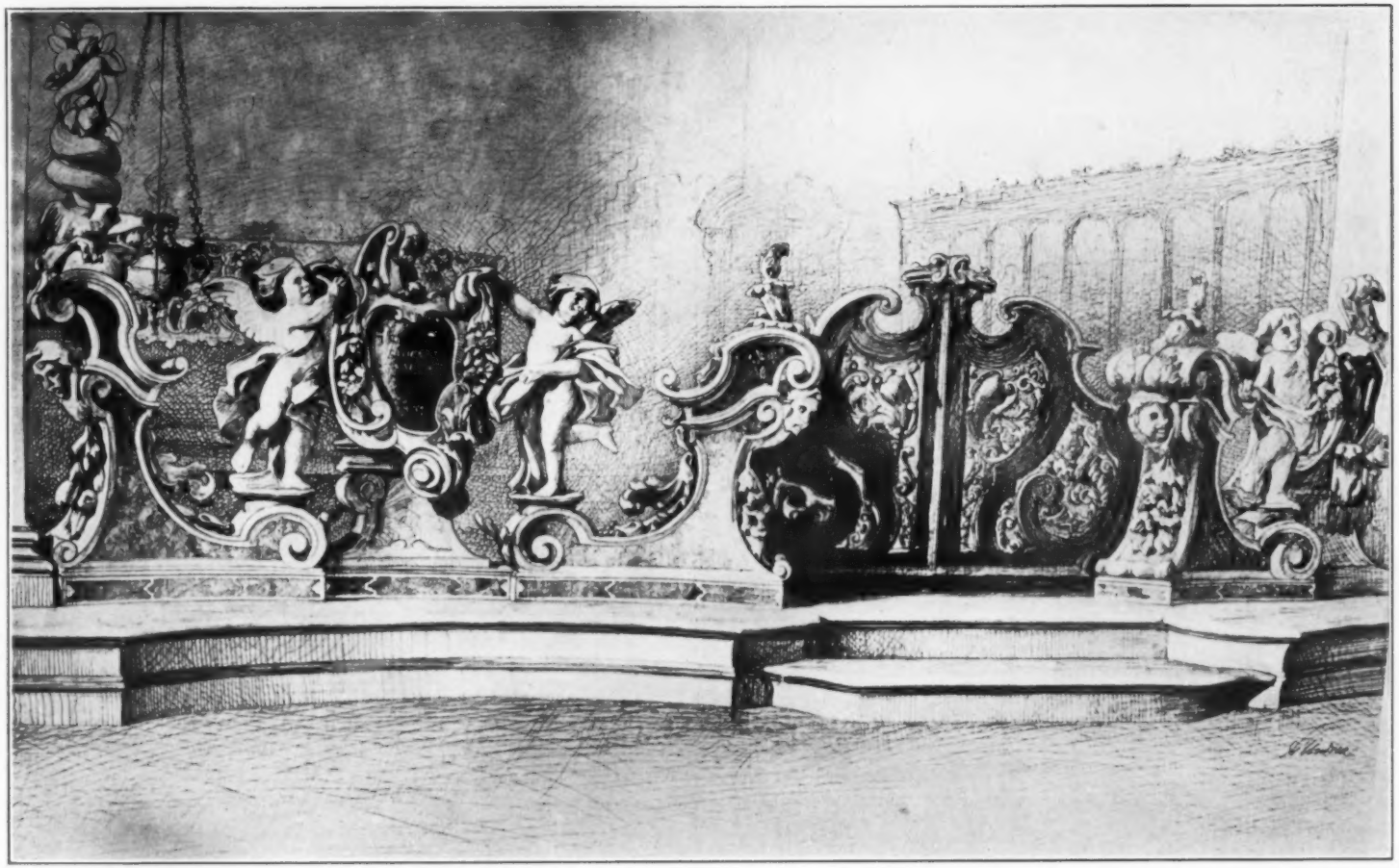
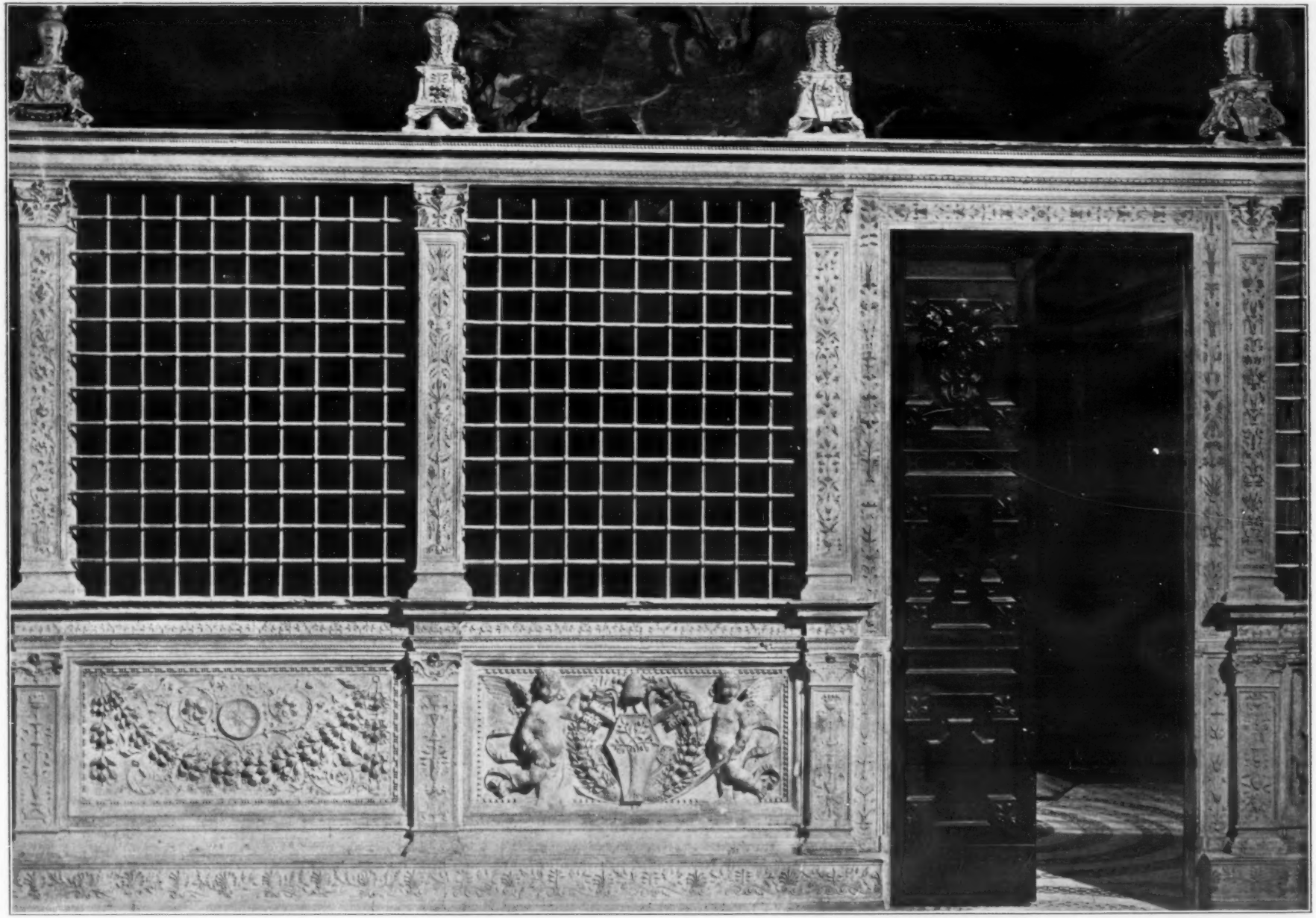


MARBLE CHAPEL BARRIER: CHURCH OF S. FRANCESCO, BRESCIA, ITALY.

ROOD AND CHAPEL SCREENS.—I, 17.



SCREEN IN SISTINE CHAPEL: VATICAN, ROME, ITALY.

[Before removal of bronze grille.]

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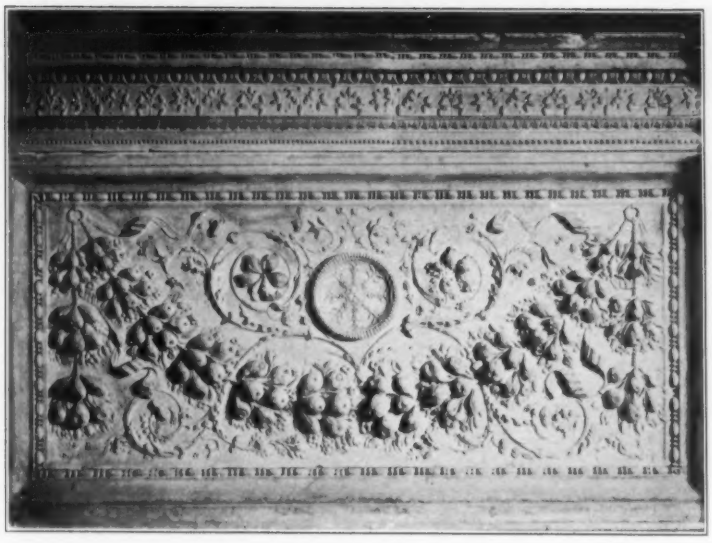

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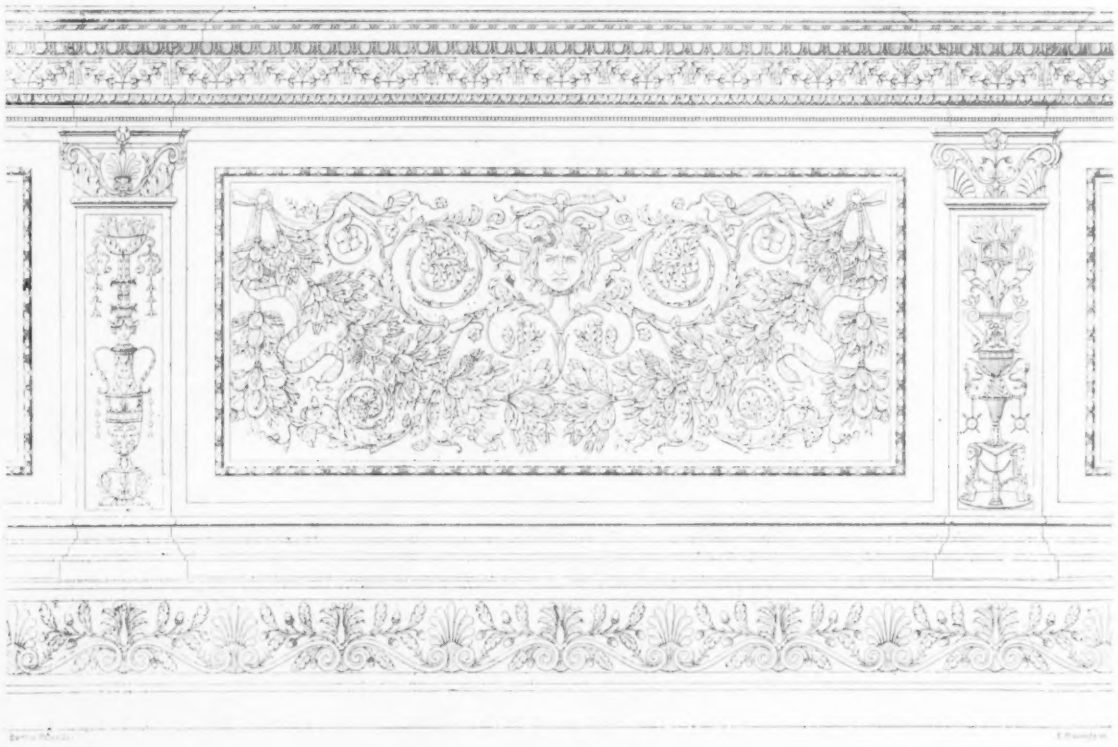
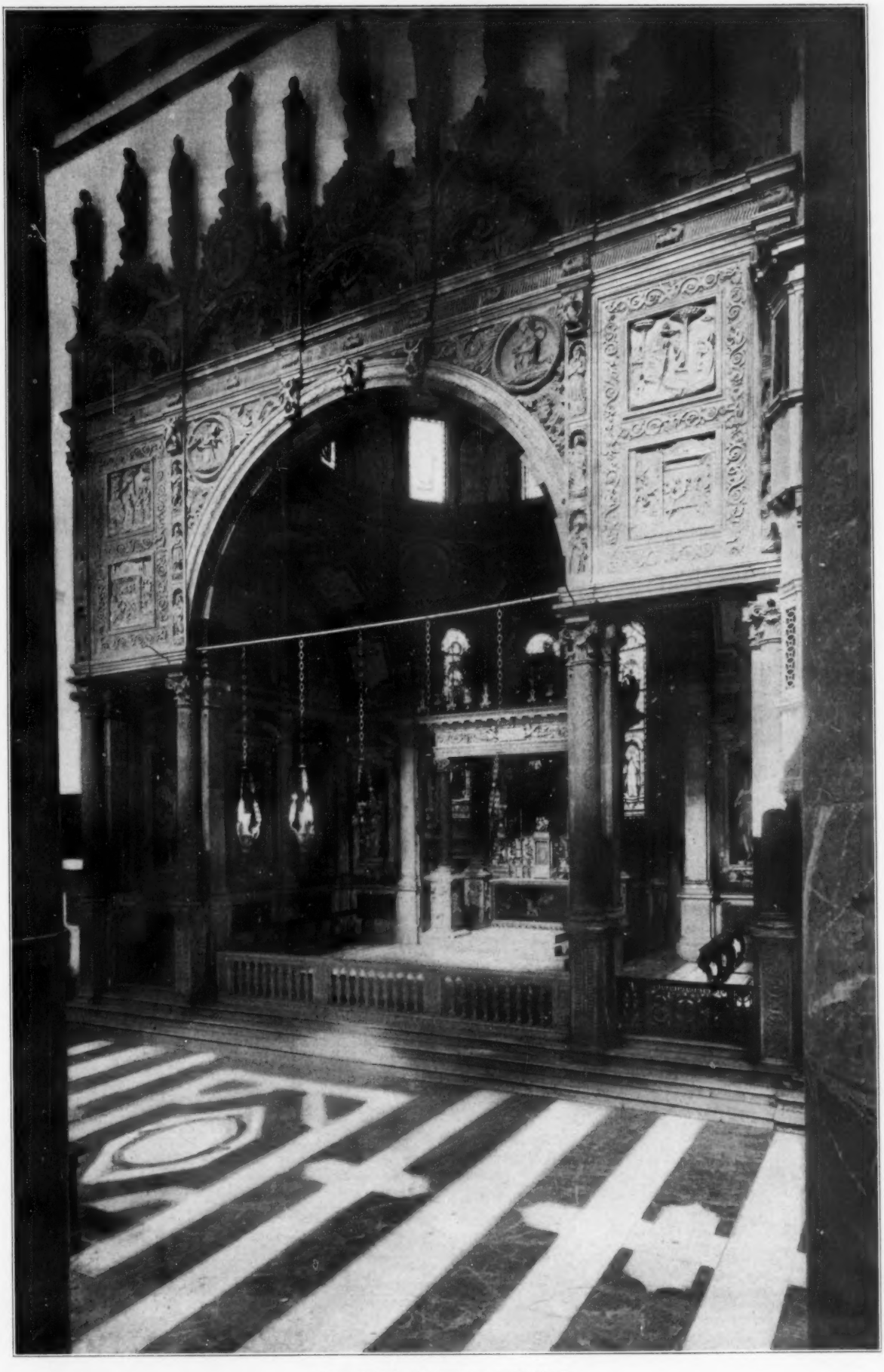


SCREEN PANELS FROM THE SISTINE CHAPEL, ROME.

ROOD AND CHAPEL SCREENS.—I, 13.



WALL SCREEN: SAN LORENZO, GENOA, ITALY.

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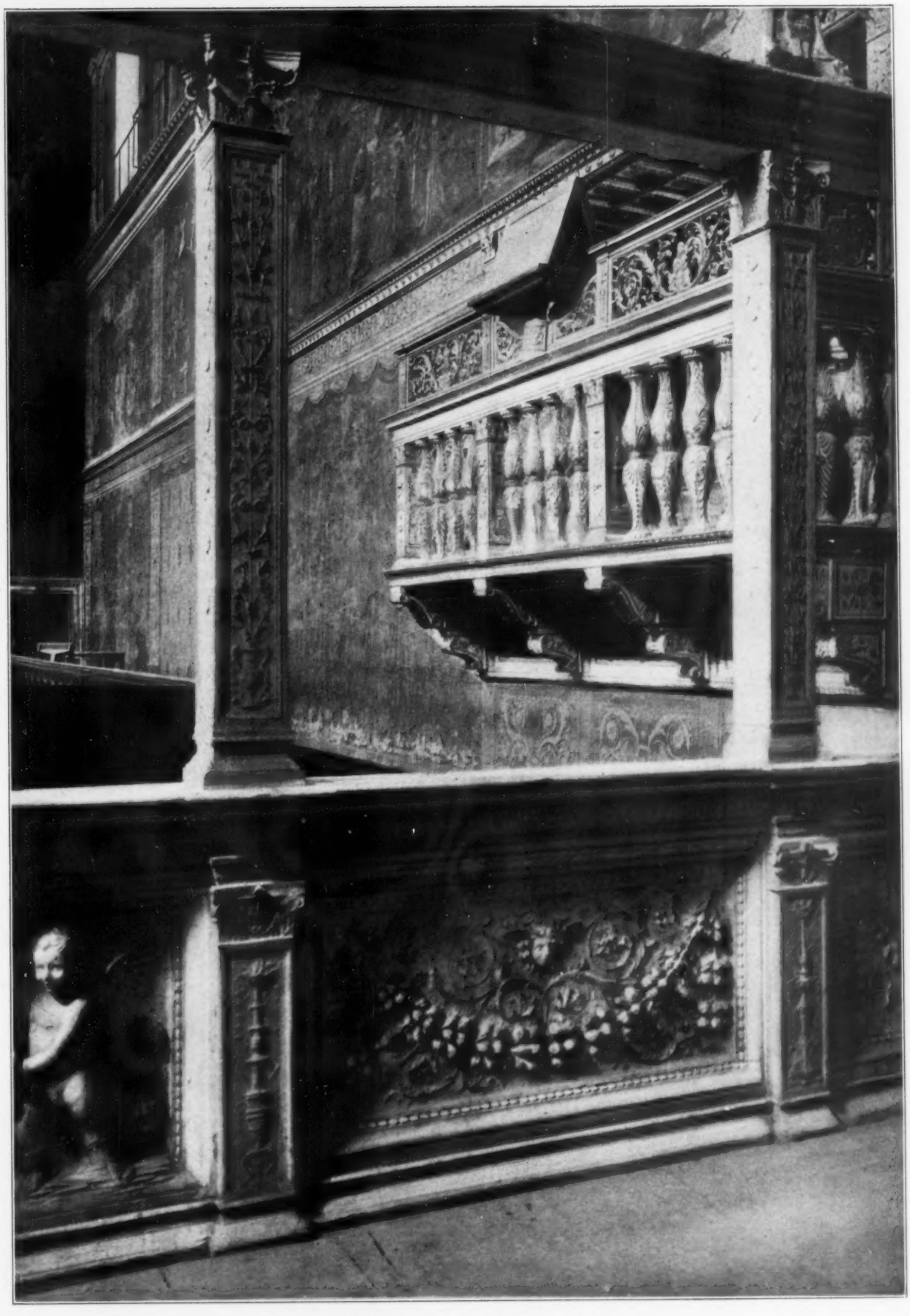

SCREEN IN SISTINE CHAPEL: VATICAN, ROME, ITALY.

[After removal of bronze grille.]

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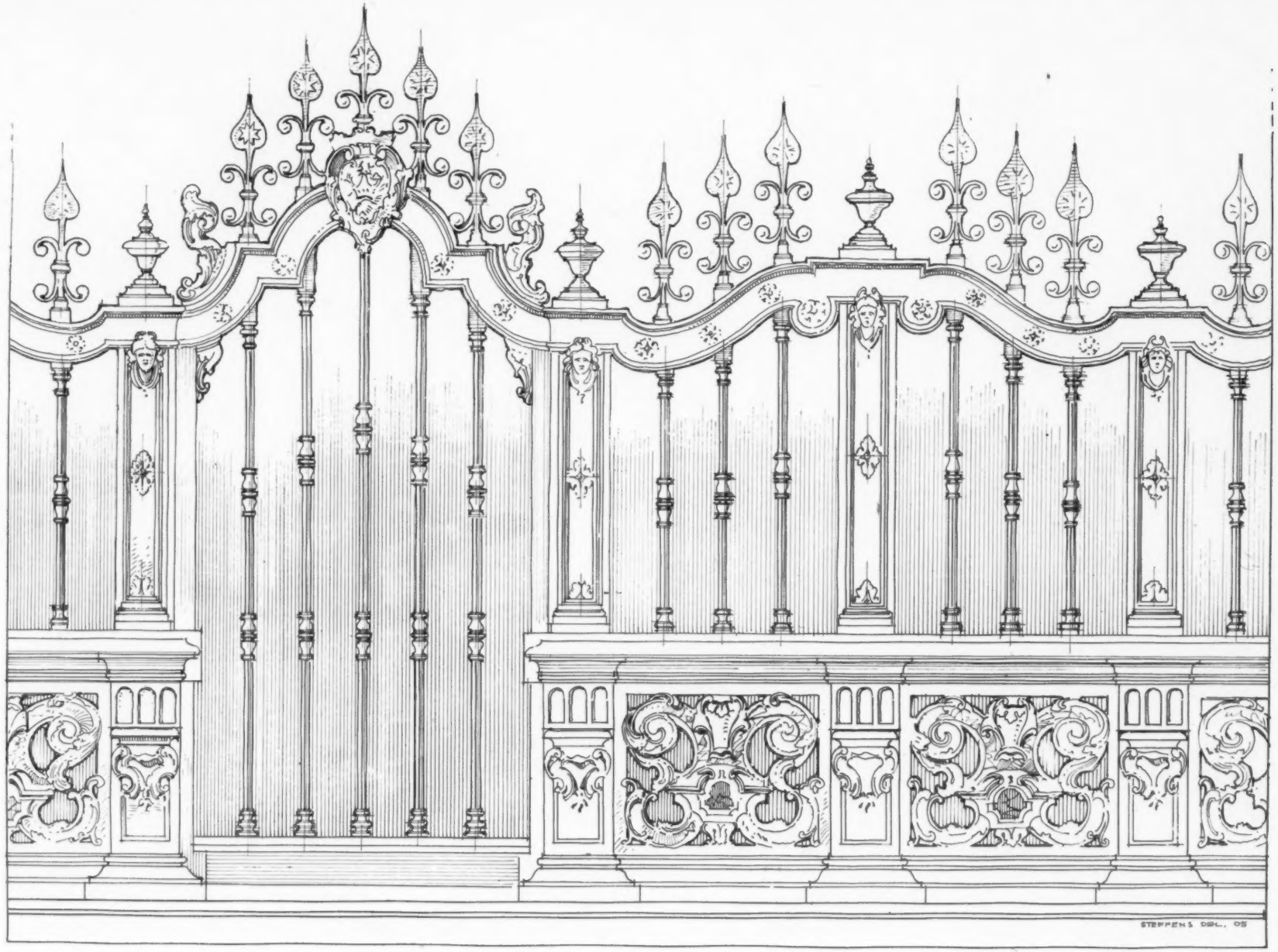

SCREEN FROM SAN DOMENICO, NAPLES, ITALY.

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